PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 115, No. 11 Thursday, September 10, 1942 Price Ten Cents

Canada Will Allocate Newsprint Orders

Wartime Prices and Trade Board Issues Order To Allot Business To Mills Most Strategically Situated — New System Is Expected To Provide Adequate Newsprint Supply and Further War Effort.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 7, 1942—With production of newsprint in Canada running around 65% of capacity (the annual capacity is now 4,399,815 tons), as compared with 80% of capacity a year ago, and with demands for man power and motive power constantly increasing for purely war industries, the Wartime Prices and Trade Board has issued an order bringing the newsprint industry under a system by which newsprint orders will be distributed among mills most strategically situated for production, thus releasing men and motive power from a number of mills for other purposes. The idea is to keep up production and shipments to meet all the demands of publishing, and there is no question about shortages of newsprint supply. Furthermore a pooling fund will be created to compensate mills which may be closed down or curtailed in their operations. The plan will be operated under an experienced newsprint executive: R. L. Weldon, of Montreal, president of Bathurst Power and Paper Company and its subsidiaries.

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We are unable to supply them with any copies back of 1912. From 1912 onward to the end of 1939 we can supply about one-half the number of copies needed to complete volumes for all of these years. We need the remaining one-half.

We appeal to those of our readers who have back copies of PAPER TRADE JOURNAL for any of the years 1872-1939 to help us make delivery of complete volumes for all these years. This great university will be a most fitting and proper place to keep in a permanent home those copies of PAPER TRADE JOURNAL that you have been preserving.

We invite you to advise us what you have and under what terms you will contribute them to the university.

Board Explains Newsprint Situation

In explaining the new system the Wartime Prices and Trade Board has issued the following statement:

"Canada's newsprint industry has been brought under an allocation system to meet in an orderly and equitable fashion the dislocations to which the industry is being subjected by shortages of power and labor.

"Plans which were under discussion with Charles Vining, newsprint administrator prior to his appointment as chairman of the Wartime Information Board, now have resulted in an order of the Wartime Prices and Trade Board conferring powers on the new administrator, R. L. Weldon, of Montreal, to allocate production and shipments.

"The demand for newsprint, particularly in the United States, has already fallen off so that the industry in Canada as a whole is operating between 60% and 70% of capacity. In Canada the special needs of war industry for electric power will require the diversion of power by order of the power controller from certain newsprint mills, and in some areas pulpwood production has been restricted by the timber controller in order to release labor and equipment for lumber operations.

"By arrangement with the Minister of Munitions and Supply and the Minister of Labor, the newsprint administrator will act as a co-ordinator for all problems affecting the industry, and will consult with and be consulted by all other federal authorities whose activities are likely to affect the industry.

"It will be an important part of the newsprint administrator's duties, in consultation with other federal authorities concerned, to endeavor to allocate production and shipments among the various mills as fairly and equitably as possible for all concerned, having regard to the over-riding consideration of war demands.

"Regard will be had to the situation in each community in which a mill is located, including the possibilities of alternative forms of employment for

(Continued on page 17)

Wisconsin Mill Employment Slightly Lower

Industrial Commission Reports 1.5 Per Cent Decline In Workers With Payrolls Off 6.2 Per Cent For July—Thilmany Co. To Receive Safety Award — Babcock Estate Appraised — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 8, 1942—For the first time in a year the employment curve in the paper industry in Wisconsin took a slight dip when the reports for July were received by the Wisconsin Industrial Commission. The number of workers on the payrolls was reported as 23,700, which is 1.5% below July of 1941.

The total has been dropping slightly for several months, but was always above the corresponding month of the previous year until August 1, thus depicting the effects of curtailed production volume in a number of mills. There was a drop in July of 1.7% from June, when the payrolls showed 24,100 workers.

Weekly Payrolls Sagged

Average weekly payrolls sagged 6.2% in one month, from $768,000 in June to $720,000 in July. They were still up 4.4% from the figure of $690,000 for July of last year, however, due to the average hourly rate having reached 78.6 cents. The average work week is down to 38.7 hours, and weekly checks during July averaged $30.41.

Employment Off In Carton Plants

Employment was off 1.4% in the 19 carton and converting plants in the Milwaukee metropolitan area, with 1,920 workers reported in July. Average weekly payrolls of $54,124 were down 2.5% from June. The work week averaged 39.7 hours at 71 cents, or $28.19 per week.

Thilmany to Receive Safety Award

When the National Safety Congress meets in Chicago October 27, the bag mill of the Thilmany Pulp and Paper Company, Kaukauna, Wis., will be awarded the trophy for first place in the paper and board re-manufacturing group of the paper industry annual safety contest, according to L. C. Smith, personnel director. The mill was one of three with perfect safety records, but Thilmany had the largest number of man-hours of exposure for the year, and therefore rated first. Thirty-one mills competed in this group and the average frequency rate was 17.16 lost time accidents per million man-hours worked.

In the paper and pulp group, the lower mill of the Thilmany company placed twenty-sixth with 46 mills competing. The average frequency for the group was 17.31, and the Thilmany average was 16.59.

Babcock Estate Appraised

The net value of the estate of Charles A. Babcock of Neenah, Wis., late president of the Wisconsin River Pulp and Paper Company, Stevens Point, Wis., has been established at $2,643,188.87, according to an order aproved by Judge D. E. McDonald of the probate court at Oshkosh, Wis. The gross estate was $4,050,188.85, and federal and state inheritance taxes amounted to $1,403,536.30.

A daughter, Mrs. Milsom Mory, will receive $1,142,137.50; a grand-daughter, Joan Babcock of Oshkosh, Wis., $857,008.07; Mary Milson Mory and Barbara Mory, grand-daughters, Neenah, Wis., $292,282.59 each; Guy O. Babcock, brother, Wisconsin Rapids, Wis., $25,630.80; Theda Clark hospital, Neenah, $25,000. Several small bequests were made to employees. Mr. Babcock died January 19, 1940.

Lieut. Parsons' Wife Enlists

Mrs. S. R. Parsons, whose husband, Lieut. Parsons, formerly was employed in the technical department of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., has enlisted in the Women's Army Auxiliary Corps and will train at Des Moines, Iowa. Lieut. Parsons was at Edgewood Arsenal, Maryland, and has been called elsewhere for active service.

Awarded Minute Man Flag

During the Central Labor Union's annual picnic Sunday and Monday of the week at La Follette Park, Kaukauna, the Thilmany company was presented with a Minute Man flag for the plant's 100% participation in the sale of war bonds since last March. Presentation was made by A. W. Parnell, Outagamie County chairman of war bond and stamp sales, and the flag was accepted by Karl E. Stansbury, president. The flag was raised by Grace Sager and Henry Maes, representatives of the pulp and paper unions. Fire companies of the Thilmany mills put on a contest during the picnic.

Remley-Beals Nuptials

Arthur P. Remley, son of Adam C. Remley, general sales manager of the Nekoosa-Edwards Paper Company, Port Edwards, Wis., and Miss Catharine Beals of Neenah, Wis., were married August 29 at Minneapolis, Minn. The bridegroom was a practicing attorney at Appleton, Wis., and is now an ensign in the United States Naval Reserve. The bride was given in marriage by her uncle, S. F. Shattuck, vice-president of Kimberly-Clark Corporation, Neenah, Wis.

Engagements in the Paper Industry

Mr. and Mrs. C. K. Boyer of Appleton, Wis., have announced the engagement of their daughter, Elizabeth, to W. Douglas Mitchell of Cleveland Heights, Ohio, now serving in the United States Navy. Mr. Boyer is manager of the Interlake Pulp and Paper Company division of the Consolidated Water Power and Paper Company.

The engagement was announced last week of Herbert G. Brock, chemist at the Riverside Paper Corporation, Appleton, Wis., and Miss Leone Nassen, Appleton.

Speculation on Concentration of Newsprint

Premier Hepburn Talks To Protesting Delegation From Niagara District and Explains Power Situation and Possibility of Closing Some Mills—Abitibi Now Operating Two or Three Days A Week.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 7, 1942—As explained by Donald Gordon, chairman of the Wartime Prices and Trade Board, the new order for the allocation of newsprint means the concentration of production in those plants and areas where it can be done with the least interference with war production. Thus Canada has picked the newsprint industry as the first non-war industry to undergo concentration in certain selected plants. Other civilian industries will be concentrated in a like manner as soon as possible, in line with the policy in vogue in Great Britain and forecast for the United States. As might have been expected, protests from those most immediately affected were prompt and emphatic.

So far there has been no official indication what mills may be restricted, although published reports have mentioned the Thorold mill of the Ontario Paper Company, Ltd., as a likely target for early action. Premier Hepburn of Ontario told a delegation from the Niagara area this week that the power supply to the Ontario Power Company's mills at Thorold will be curtailed because of the increasing demands for electrical energy in the Niagara district and Western Ontario. He said that the order has been made by the federal power controller under authority of the War Measures Act, and prevents the Ontario Hydro Commission from supplying power to this plant after October 1, except a very limited amount, sufficient to utilize the pulpwood stockpile now on hand.

Premier Hepburn Talks to Delegation

Premier Hepburn was speaking before a deputation from the Niagara district. The deputation was before him in protest against the closing of mills at Thorold and included the mayors of several municipalities and workers in the pulp and paper and electrical industries.

The Ontario plant has been supplied with 30,000 h. p. by the Hydro Electric Power Commission of Ontario. It supplies paper to the Chicago Tribune and the New York Daily News. Recently Ottawa officials denied that anti-British and isolationist policies of those newspapers had anything to do with proposals to transfer power from the newsprint plant.

Possibility that other mills in the Thorold district might be forced to close was also seen by the Premier. Operation of the Ontario Paper Company alone affects half a dozen other companies. The Quebec and Ontario Transportation Company, a subsidiary shipping line, operates six freighters on the Great Lakes. Other units of the pulp and paper industry in the area are the Beaver Wood and Fibre Company, Brantford Felt and Paper Company, in Thorold township; Provincial Paper Mills, Thorold; Interlake Tissue Mills, Alliance Paper Company, Lybster Mill and the Garden City Paper Mills, Merriton.

Mayor Cox Advocates Diversion

Meanwhile, Charles W. Cox, mayor and M.P.P. for Port Arthur, opened a campaign to obtain diversion of newsprint tonnage from Thorold to near-idle plants at the head of the lakes.

"The Abitibi mills at Port Arthur and Fort William are working only two or three days a week," Mayor Cox said, "and the McCormick interests which control the mills at Thorold have 12,000 square miles of timber limits right up beside these mills on Lake Superior. As it is now, this rough wood is shipped 1,000 miles down the Great Lakes to Thorold, and then shipped back through the lakes to Chicago. I say this is one of the most unsound economic deals in Canada and common sense would indicate that the paper should be made in the northern mills and the power saved for war work."

Premier Hepburn said that his government would do everything in its power to divert the tonnage to the head of the lakes. He had said on a previous occasion that negotiations to obtain more power from Quebec had been unsuccessful, and he would complain "loud and long" if any of the tonnage from the Thorold mill went to Quebec mills. The Thorold mill is the larger of the two mills operated by the company owned by the Chicago Tribune and New York Daily News. The smaller mill is at Comeau Bay, far up on the St. Lawrence River. It generates its own power and is out of the war industries area. Moreover, its ships, which take away its paper, bring back aluminum ore, by way of the Hudson River, Erie and Oswego canals and Lake Ontario, for Canada's huge and ever-increasing war production plants in the St. Lawrence area.

It is expected that some curtailment of paper and pulp production may be ordered for the St. Lawrence Valley area, because of the increasing power requirements of war industries, but Northwestern Ontario has ample power resources as well as man power and mills that are not operating anywhere near capacity.

The announcement of the Wartime Prices and Trade Board indicated that regard would be had to the situation in each community in which a mill is located, including the possibilities of alternate forms of employment for workers in any mill at which, by reason of power shortages, operations have to be curtailed. Close contact will be maintained with the director of national selective service, who has appointed an advisory manpower committee for the industry, including representatives of employees.

Shutdown To Be Worked Out

How extensive shutdowns will be, it is understood, remain to be worked out. For instance, it is believed the Thorold mill will be permitted to manufacture sulphite, used for war purposes, and some mills running two machines part time may be ordered to use one machine full time. Some staggering of operations to conserve power are also under consideration.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Sept. 9, 1942—The Government Printing Office has received the following bids for 33,150 pounds of 50%, 34½ x 44" green index paper: R. P. Andrews Paper Company, 13.27 cents: Barton, Duer & Koch, 12.20 cents; Butler Company, 13.33 cents; Mudge Paper Company, 11.33 cents: Paper Corp. of U. S., 11.69 cents; Frank Parsons Paper Company, 16.36 cents; Stanford Paper Company, 13.48 cents; Walker, Goulard, Plehn Company, 11.73 cents; Whitaker Paper Company, 11.7 cents: Wilcox-Walter-Furlong, 16.36 cents; Coy Hunt & Company, 10.835 cents; and Collins Mfg. Company, 12.19 cents.

For 33,150 pounds of 50%, 34½ x 44" cherry index paper: R. P. Andrews Paper Company, 13.27 cents; Graham Paper Company, 17.12 cents; Mudge Paper Company, 11.33 cents; Paper Corp. of US 11.69 cents; Frank Parsons Paper Company, 16.36 cents; Stanford Paper Company, 13.48 cents; Walker, Goulard, Plehn Company, 11.73 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 16.36 cents; Coy Hunt & Company, 11.435 cents; and Collins Mfg. Company, 12.19 cents.

For 33,150 pounds of 50%, 34½ x 44" fawn index paper: R. P. Andrews Company, 13.27 cents; Mudge Paper Company, 11.33 cents; Paper Corp. of US, 11.69 cents; Frank Parsons Paper Company, 16.36 cents; Stanford Paper Company, 13.48 cents; Walker Goulard, Plehn Company, 11.73 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 16.36 cents; Coy Hunt & Company, 10.835 cents; and Collins Mfg. Company, 12.19 cents.

For 33,150 pounds of 34½ x 44" salmon index: R. P. Andrews Paper Company, 13.27 cents; Marquette Paper Company, 12.25 cents; Mudge Paper Company, 11.33 cents; Paper Corp. of US, 11.69 cents; Frank Parsons Paper Company, 16.36 cents; Stanford Paper Company, 13.48 cents; Walker, Goulard, Plehn Company, 11.73 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 16.36 cents; Coy Hunt & Company, 11.185 cents; and Collins Mfg. Company, 12.19 cents.

For 33,150 pounds of 50%, 34½ x 44" buff index paper: R. P. Andrews Company, 13.27 cents; Mudge Paper Company, 11.33 cents; Paper Corp. of US 11.69 cents; Frank Parsons Paper Company, 16.36 cents; Stanford Paper Company, 13.48 cents; Walker Goulard, Plehn Company, 11.73 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 16.36 cents; Coy Hunt & Company, 10.835 cents; and Collins Mfg. Company, 12.19 cents.

For 21,550 pounds of 50%, 34½ x 44" cherry index paper: R. P. Andrews Company, 13.27 cents: Graham Paper Company, 17.12 cents; Mudge Paper Company, 11.33 cents; Paper Corp. of US, 11.69 cents; Frank Parsons Paper Company, 16.36 cents; Stanford Paper Company, 12.88 cents; Walker Goulard, Plehn, 11.53 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong, 15.61 cents; Bulkley, Dunton & Company, 14.20; Coy Hunt & Company, 11.435 cents; Collins Mfg. Company, 12.19 cents; and D. L. Ward Company, 14.19 cents.

For 17,500 pounds of 50%, 34½ x 44" cherry index paper: R. P. Andrews Company, 13.27 cents: Graham Paper Company, 17.12 cents; Mudge Paper Company, 10.83 cents; Paper Corp. of US, 11.69 cents; Frank Parsons Paper Company, 15.61 cents; Stanford Paper Company, 12.88 cents; Walker, Goulard, Plehn Company, 11.53 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 15.61 cents; Bulkley, Dunton & Company, 14.20 cents; Coy Hunt & Company, 11.435 cents; Collins Mfg Company, 12.19 cents; and D. L. Ward Company, 14.19 cents.

For 11,000 pounds of 50%, 28 x 34" cherry index paper: R. P. Andrews Paper Company, 11.47 cents: Graham Paper Company, 17.12 cents; Mudge Paper Company, 10.83 cents; Paper Corp. of US, 11.69 cents; Frank Parsons Paper Company, 15.61 cents: Stanford Paper Company, 12.88 cents; Walker-Goulard-Furlong Company, 11.53 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 15.61 cents; Bulkley, Dunton & Company, 14.20 cents; Coy Hunt & Company, 11.435; Collins Mfg. Company, 12.19 cents; and D. L. Ward Company, 14.19 cents.

For 10,500 pounds of 50%, 24 x 38" cherry index paper: R. P. Andrews Company, 11.47 cents; Graham Paper Company, 17.12 cents; Mudge Paper Company, 10.83 cents; Paper Corp. of US, 11.69; Frank Parsons, 15.61 cents; Stanford Paper Company, 12.88 cents; Walker, Goulard, Plehn Company, 11.53 cents: Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 15.61 cents; Bulkley, Dunton & Company, 14.20 cents; Coy Hunt & Company. 11.435 cents; Collins Mfg. Company, 12.19 cents: and D. L. Ward Company, 14.19 cents.

For 17,500 pounds of 50%, 34½ x 44" buff index paper: R. P. Andrews Company, 13.27 cents; Marquette Paper Company, 12.25 cents; Mudge Paper Company, 10.83 cents; Paper Corporation of US. 11.69; Frank Parsons Paper Company, 15.61 cents; Stanford Paper Company, 12.88 cents; Walker, Goulard, Plehn Company, 11.19 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 15.61 cents; Bulkley, Dunton & Co., 14.20 cents; Bermingham & Prosser, 11.39 cents; Coy Hunt & Company, 10.835 cents; Collins Mfg. Company, 12.19 cents; and D. L. Ward Company, 14.19 cents.

For 17,500 pounds of 50%, 34½ x 44" salmon index paper: R. P. Andrews Company, 13.27 cents; Mudge Paper Company, 10.83 cents; Paper Corp. of US, 11.69 cents; Frank Parsons Paper Company, 15.61 cents; Stanford Paper Company, 12.88 cents; Walker, Goulard, Plehn, 11.39 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 15.61 cents; Bulkley, Dunton & Company, 14.20 cents; Bermingham & Prosser, 11.39 cents; Coy Hunt & Company, 11.185 cents; Collins Mfg. Company, 12.19 cents; and D. L. Ward Company, 14.19 cents.

For 11,000 pounds of 50%, 28 x 34" salmon index: R. P. Andrews Company, 11.47 cents; Mudge Paper Company, 10.83 cents; Paper Corporation of US, 11.69 cents; Frank Parsons Paper Company, 15.61 cents; Stanford Paper Company, 12.88 cents: Walker, Goulard, Plehn Company, 11.39 cents: Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong, 15.61 cents; Bulkley, Dunton &

Company, 14.20 cents; Bermingham & Prosser, 11.39 cents; Coy Hunt & Company, 11.185 cents; Collins Mfg. Company, 12.19 cents; and D. L. Ward Company, 14.19 cents.

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For 11,000 pounds of 28 x 34" green index paper: R. P. Andrews Company, 11.47 cents; Butler Company, 12.74 cents; Mudge Company, 10.83 cents; Paper Corporation of US, 11.69 cents; Frank Parsons Paper Company, 15.61 cents; Stanford Paper Company, 12.88 cents; Walker, Goulard, Plehn Company, 11.53 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 15.61 cents; Bulkley, Dunton Company, 14.20 cents; Bermingham & Prosser, 11.39 cents; Coy Hunt Company, 10.835 cents; Collins Mfg. Company, 12.19 cents and D. L. Ward Company, 14.19 cents.

For 10,500 pounds of 50%, 24 x 38" green index paper: R. P. Andrews Company, 11.47 cents; Barton, Duer & Koch, 12.20 cents; Butler Company, 12.74 cents; Mudge Company, 10.83 cents; Paper Corp. of US, 11.69 cents; Frank Parsons Paper Company, 15.61 cents; Stanford Paper Company, 12.88 cents; Walker, Goulard, Plehn Company, 11.53 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 15.61 cents; Bulkley, Dunton & Company, 14.20 cents; Coy Hunt Company, 10.835 cents; Collins Mfg. Company, 12.19 cents; and D. L. Ward Company, 14.19 cents.

For 11,000 pounds of 50%, 28 x 34" pink index: R. P. Andrews Paper Company, 11.47 cents; Mudge Paper Company, 10.83 cents; Paper Corp. of US, 11.69 cents; Frank Parsons Company, 15.61 cents: Stanford Paper Company, 12.88 cents; Walker Goulard, Plehn Company, 11.39 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong Company, 15.61 cents; Bulkley, Dunton & Company, 14.20 cents; Collins Mfg. Company, 12.19 cents; and D. L. Ward, 14.19 cents.

For 17,500 pounds of 50%, 34½ x 44" pink index: R. P. Andrews Paper Company, 13.27 cents; Mudge Paper Company, 10.83 cents; Paper Corp. of US 11.69 cents; Frank Parsons Paper Company, 15.61 cents; Stanford Paper Company, 12.88 cents: Walker, Goulard, Plehn Company, 11.39 cents; Whitaker Paper Company, 11.7 cents; Wilcox-Walter-Furlong, 15.61 cents; Bulkley, Dunton & Company, 14.20 cents; Collins Mfg. Company, 12.19 cents; and D. L. Ward, 14.19 cents.

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Modern Comforts at Scott Plant

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 7, 1942—All the modern comforts are contained in a new floor just opened in the Chester mill of the Scott Paper Company, the fulfillment of a plan started three years ago. The floor was under construction before the advent of Government building restrictions. In its 44,000 feet are washroom facilities for the mill's employes, recreation rooms, a cafeteria for men, and a dining room for both men and women. Good food, sold at cost, a brisk shower in a stall, and street clothes lowered from a high-domed locker room without lockers, is a far cry from the days when lunch was carried in a box or paper bag.

Most novel feature is the men's locker room, which is actually a drying chamber, and perhaps the only one of its kind in American history. Each workman is assigned a steel box, equipped with hooks for clothing, and suspended by a chain and pulley arrangement from the high ceiling. Specially designed vents in the air-conditioning system ventilate street clothes while the men work, then dry and freshen work garb when they go home. Each box has a lock for the safekeeping of valuables.

The ladies, not employed in the steam vat rooms, have a locker room with common steel lockers, but like the men have batteries of showers mounted in stalls built around a hub, and sunk deep in dias-like stone circles. Each washroom also contains batteries of stone hand-washing fountains, operated by foot levers. The eating rooms are wood-paneled, as are the recreation rooms, which are equipped with games, newspapers and periodicals, and leather divans for lunch-hour leisure.

Customs Court Rules on Paper Disks

The United States Customs Court has handed down a decision in favor of the plaintiff in an action brought by W. X. Huber Company, Los Angels, Cal., importer of circular cut paper disks used for filtering purposes. The material was assessed at 6 cents per pound and 20 per cent as tissue paper disks; the company claimed duty at 5 cents per pound and 15 per cent.

Take An Inventory Now

Industry Advised To Obtain Replacements As Nation's Military Manpower Needs Increase

By Major General Lewis B. Hershey, U.S.A.[1]

Manpower is a most important strategic material of today. Every employer should make a prompt inventory, appraisal and analysis of the manpower in his own plant as he would inventory his stock pile. In order to keep production going and at the same time furnish men for the armed forces, industry should now establish an orderly replacement program.

In order to secure temporary deferments for essential men while he is training women, young men, older men, men physically handicapped or those with a high degree of dependency, the employer should know the fundamental principles in the operation of his local Selective Service Board. Certain steps should now be taken by each employer. He should know how many men on his pay roll are between the ages of 20 and 45. He should investigate the classification of every one of those men. On the basis of such an inventory he should prepare to plan ahead and train men for replacement of those who must necessarily enter the armed forces if we are to have the sort of army which can win the war.

Deferments Temporary

Deferments, granted so that employers may train women or men not liable to early induction, are temporary deferments; they cannot exceed six months and in many cases may be for only thirty, sixty or ninety days. The Army today has to train a bomber pilot within a period of eight months to operate a very technical machine with an instrument board which puzzles an expert. Why, therefore, should industry insist that it assume that it can take two or three years to train men for industrial tasks not nearly so complicated?

The fundamental purpose of every deferment of a registrant is to allow an employer to train a replacement. Only in a few rare instances can an employer expect to have these temporary deferments continued for more than the six months period. These are only in cases where an abnormally long period of training is required for a replacement and the eight months needed in which a bomber pilot can be turned out now, is something to remember in this connection.

Employer's Responsibility

Employers may seek the deferment of their necessary men with or without their consent.

Here is how they go about it.

On page 3 of the Selective Service Questionnaire (Form 40) which is sent to each registrant before he is classified is the following:

> Instructions.—If your employer believes that you are a necessary man in a necessary occupation, it is his duty to fill out form 42A requesting your deferment. You may also attach to this page any further statement by yourself which you think the local board should consider in determining your classification. Such statement will then become a part of the questionnaire.

This is on all the questionnaires distributed during the past six months. The fact that the Selective Service System now specifically mentions the filing of Form 42A as the manufacturers' duty is a clear indication of the Selective Service System view on the responsibility of each employer in this matter.

The employer can secure Form 42A at the local board and the local board will consider the employer's request when the form is properly filled out and signed.

If such request should be denied because the man, after consideration of the claims offered for him, is not considered to be indispensable to the company's operation, and is needed more in the armed services, the local board will advise the employer of its refusal of such an occupational deferment.

The local board does this by sending to the employer, at the same time it notifies the registrant of his classification, a Form 59.

May Make Appeal

There are ten days after Form 59 is mailed by the local board to the employer during which the employer can appeal the registrant's case.

The registrant will not be ordered to report for induction during this ten-day period.

In order to take an appeal the employer simply has to sign his name to Form 59 which he has received, and return it to the local board; or in case the Form 59 is not received from the local board, any written request will have full value to make such an appeal effective.

When Form 59 is returned by the employer the appeal procedure becomes automatic.

All necessary forms are available at the local board in the employer's immediate vicinity or at the office of the State Director of Selective Service.

If the local board and the appeal board deny the appeal for the occupational deferment of a key man, the employer may then bring the matter to the attention of the State Director at the State Selective Service Headquarers, with the request that the case be reopened or appealed by him to the President.

Definite Duty

A double duty rests upon the employer. He should personally know what his manpower situation is. He should not leave the job to a minor employee to decide who is necessary. The employer who delegates the task of filing a request for deferment to a clerk, the executive who does not make a complete inventory of his whole plant today, is negligent. Likewise, the employer who files requests for deferment of men who can be replaced by women, or others, is keeping reinforcements out of an Army which is battling for us all. The employer engaged in essential war production who has been required to greatly expand his plant and who then fails to request deferment for his key men is also negligent.

[1] Director of Selective Service.

A good rule to follow: Don't ask deferments for any men who can be replaced by training another individual not likely to be eligible soon for service in the armed forces.

Make an inventory, request deferment for any man whose immediate going into the armed services would retard production of vital war material or other services essential to the war effort, or who is needed to maintain national health, safety and interest.

Only when an employee is working in a critical occupation within an essential industry should a Form 42A be filed for his temporary occupational deferment.

Make Replacements

Yes, an inventory within a man's own plant is called for; also an appraisal and analysis of the manpower in the community. There is many a man over 45, or a man physically handicapped, or a woman who can do that job that the 23-year-old boy is doing who took a 12-weeks course at a learn-quick school.

There are not more than sixty million people in this country who are capable of effective productive effort. These men and women represent our total manpower available to win the war. They must do everything that must be done in a total war; maintain transportation, communications and utility systems, maintain public services, grow food for ourselves and our allies, mine the metals and produce the raw materials, fabricate and produce the amount of consumers goods necessary to maintain even a restricted national life and the supplies, weapons and munitions of war; also most of all they must provide the men who land on strange shores in far places, the men who carry the fight to the enemy on a multitude of far-flung frontiers. The rest of the population who mine raw materials and produce the weapons with which these men fight must be a self-disciplined team working in unity. The individual personal convenience, comfort or pleasure, or the convenience and ordinary leisurely replacement programs of the employer, will have to be given progressively less consideration as the war gets tougher and the casualty lists grow.

Worth Deep Consideration

When we hear of the big armies we are going to raise, we must all remember that it takes at least five men or women to produce what they eat, use, fight with, and wear. With less than sixty million availables in this country, those figures are worth deep consideration.

Hunter Museum to be Open for TAPPI

The Dard Hunter Paper Museum of the Massachusetts Institute of Technology will be open for visitors during the fall meeting of the Technical Association of the Pulp and Paper Industry at Boston on September 29, 30, and October 1. Mr. Hunter will be at the Paper Museum during the entire convention and all TAPPI members and their guests will receive a cordial welcome.

The Paper Museum is located in the new William Barton Rogers building, 77 Massachusetts Avenue, Cambridge. It is just over the Harvard Bridge from Boston and may be reached by surface cars or subway. The Massachusetts avenue cars may be taken at Copley Square in Boston which is only a three-minute walk from Convention Headquarters at the Hotel Statler. In collecting the material for this museum, Mr. Hunter has spent thirty-five years of his life and has traveled to the far corners of the globe. The result is a collection of "Paperiana" which will interest everyone whether or not he or she may be connected with the paper industry.

The countries which were visited sound like a Cook's tour or a travelogue program. They include every country in Europe, China, Korea, Japan, Manchuria, Siam, Indo-China, Malay Peninsula, Java, Sumatra, Philippines, Palawan, Mexico, Central America, Africa, Celebes, Ceylon, Hyderabad, Madras, Bengal, Kashmir and other parts of India; Arabia, New Zealand, and the islands of Rarotonga, Tongatabu, Tahiti, Moorea, Vavan, Hoopei, Toafu, Samoa, Fiji, Hawaii and many other out of the way places—all localities where paper in one form or another, at some period, has been fabricated.

One of the most interesting items of the collection includes papermaking molds from China, Japan and Korea, including the original type of "Wove" mould such as Ts' ai Lun used when paper was invented during the second century A. D. Also on display is the original style of "laid" transfer mould. This transfer mould was the first real step in papermaking development and upon its construction rests all modern papermaking, both by hand and machine.

There are specimens of early Chinese papers, dating from the sixth century onward; paper money from the earliest times; examples of all types of ceremonial papers and many forms of decorated paper used in the Buddhistic and Taoistic religions. From India there are various types of grass and bamboo papermaking moulds including appliances from the age-old paper center of Nowshera in Kashmir. There are papers made by students in Mohandas Gandhi's school of papermaking in Wardha where the Mahatma has his home and where he has tried to put papermaking on an equal footing with weaving as a home industry.

There are primitive papers and the tools used in their manufacture from many of the South Pacific Islands, from Java, Central America, Mexico, and Africa. Nearly every country of Asia where paper is made is represented by at least a small niche in the museum. In the Museum cases may be studied the first European textbooks relating to papermaking. The collection covers practically every known item relating to the subjects of papermaking by hand and the watermarking of handmade papers.

The Paper Museum enters into the field of watermarking by displaying the various tools and equipment used in producing the finest light and shade papermarks. The difference between a handmade paper watermark and a machinemade emblem is given, with a comprehensive history of trademarks in paper. One of the most instructive exhibits consists of a full-size equipment for the making of the finest handmade papers. This equipment, procured in southern England, was brought to America especially for the museum and is the only complete apparatus of its kind in this country.

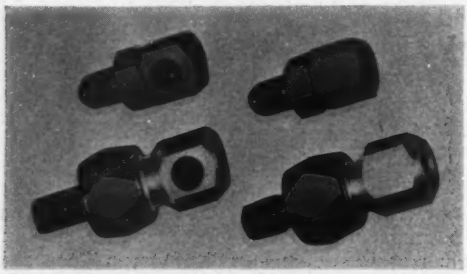
Everyone who attends the TAPPI fall meeting should plan to visit the Dard Hunter Paper Museum. There is no other place where such an inspection into the history and development of our industry may be obtained.

New Products and New Uses for Old

Straight and Angle Swivels

Trabon Engineering Corporation, Cleveland, Ohio —manufacturer of automatic lubricating systems, lubricating fittings, oil and grease pumps, etc—has introduced a new line of straight and 90 deg. angle swivels for use in making oil, grease, air and other line connections between stationary, and revolving, oscillating or other moving surfaces.

These swivels are available in two different constructions for different requirements. The Standard Ball Bearing Swivels are available in ⅛, ¼, ⅜, ½,



For Making Line Connections

¾ and 1 inch pipe sizes. Due to the ball bearing construction, these swivels turn freely at any pressure without binding and should always be used if space permits. The stem and nut on which the balls turn are hardened to minimize wear.

Light duty swivels are built without balls. They are intended for use only in lighter work when space limitations do not permit the use of standard ball bearing swivels,—and are offered only in ⅛ and ¼ inch pipe sizes.

Both standard ball bearing and light duty swivels are furnished regularly with right hand threads in both head and stem. Swivels with left hand threads in either the head or stem, or in both the head and stem,—and swivels built from special materials for handling corrosives, etc., can be furnished on special order..

A fully descriptive engineering bulletin giving dimensions, etc.,—also prices and other details can be secured by writing Trabon Engineering Corporation, 1814 East 40th street, Cleveland, Ohio.

New Resin for Paper Making

A new synthetic resin which not only renders paper strong even after prolonged soaking in water, but increases substantially its folding endurance, bursting and tensile strength, is announced by American Cyanamid and Chemical Corporation. All this is accomplished without adversely affecting other properties of the paper. The new product will be of interest to paper makers because of the simplicity of its application. The new resin is made from melamine, a derivative of calcium cyanamide.

High wet strength is important today when paper is required to substitute for other scarce wrapping materials. Bags for potatoes, wrappings for vegetables, corrugated boxes, and paper towels are typical examples of paper requiring high wet strength. Also, this applies to blue print papers that undergo successive wettings in the processes of preparation and many foldings in use.

Heretofore resins for increasing wet strength could not be mixed with pulp to the formation of the sheet because, being soluble in water, they were lost when the water drained from the fibers. This called for special equipment so that the resin could be applied to the paper subsequent to its formation into a sheet. The new resin possesses an affinity for the fibers and therefore is added to the pulp while in preparation. The treated pulp is then formed into a sheet and processed in the usual way with no other variations from the regular procedure. No changes in or addition to the normal paper mill machinery for producing the improved paper are required other than that necessary for handling the resin solution. This will be of special interest to mills not equipped to make surface applications of chemicals to their paper products.

The new melamine resin is outstanding in that it increases the folding endurance of paper. It also has the property of tending to increase bursting strength and tensile strength and resistance of rosin sized papers to water penetration. Furthermore, these properties are retained over long periods on storage under adverse conditions.

The special resin used in this new treatment of paper is made from melamine, produced by American Cyanamid Company from its basic product, calcium cyanamide, which in turn is made from limestone, coal and nitrogen of the air. Other resins derived from melamine are valuable as molding compounds and as ingredients of modern quick drying paints and enamels.

New Literature

Flexible couplins, utilizing centrifugal force, is the subject of Bulletin No. 642, issued by W. H. Nicholson & Co., 12 Oregon street, Wilkes-Barre, Pa. It describes the construction, functions and general merits of the Nicholson flexible, all-metal, flood-lubricated coupling. Installation instructions are given and a list of dimensions, weights and prices are included.

Step valves in pumps, are discussed in Bulletin 426, issued by Milton Roy Pumps, 1300 East Mermaid avenue, Philadelphia, Pa. It explains its use in Milton Roy pumps, and how it functions in pumping against pressures up to 20,000 lbs. per square inch, in handling fibers in suspension, etc. These valves are claimed to be non-clogging and self-cleaning.

Experiment with Mimosa for Pulps

[From our regular correspondent]

Washington, D. C., September 8, 1942—Experiments have been made in South Africa with mimosa wood for the production of wood pulp, the Free Belgian radio at Leopoldville, Belgian Congo, said in a broadcast monitored by the Federal Communications Commission.

Pulp made from mimosa wood, which is abundant in South Africa, will be sent to paper mills in the Union for experiment on a commercial basis, the Leopoldville radio said.

Stamina APLENTY to withstand 3 shifts—daily operation

No premature aging, though operating continuously—under heavier loads—at higher speeds! . . . WOOD'S equipment for power transmission is engineered with a substantial *extra margin* of strength and endurance. It's the kind of solid quality that's apparent at a glance. And, it's the kind of careful workmanship that gives you highest drive efficiencies—steadily—throughout the long life of the drive. Consult the nearest WOOD'S distributor; he can help you keep vital drives clear of power leakage, waste and breakdowns.

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Bearings — Collars — Clutches — Coupling
Contactors — Hangers — Pillow Blocks —
leys — V-Belt Sheaves and Complete Dri

THE BULLETIN BOARD

Machinery builders who are now making their own pulleys, pillow blocks, sheaves, bearings and other similar parts can release men and machines for other vital production by letting Wood's handle this part of the problem.

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because of the use of fewer, larger motors which are less costly per horsepower to install and operate than are smaller ones.

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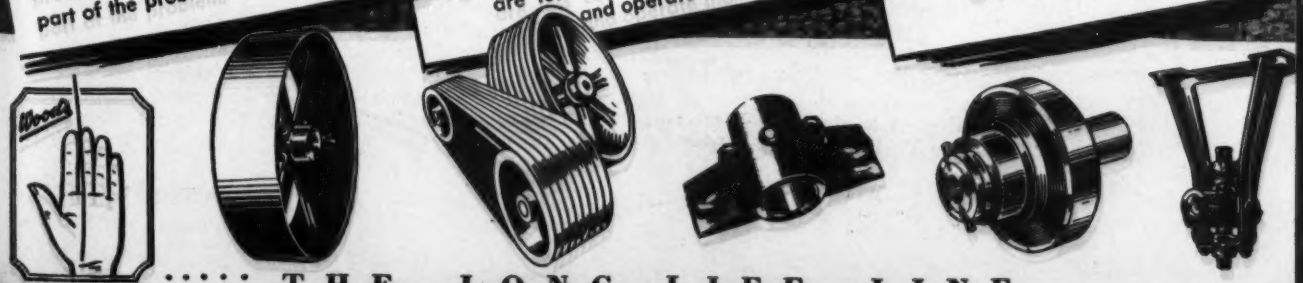

..... THE LONG-LIFE LINE

Obituary

George S. Morse

George S. Morse, president of the Valley Paper Company, Holyoke, Mass., and former advertising manager of Carter, Rice & Co., Corp., Boston, died September 4 of a heart attack.

Born in Melrose, son of George L. and Sarah Griggs Morse, he attended Boston Latin School and was graduated from Harvard College in 1901. He entered the employ of the Boston paper firm as a stock boy and came to Holyoke in 1912 as salesman for the company of which he was to become president. His work entailed travel throughout Eastern United States and Canada.

He had been a member of the Boston Chamber of Commerce, the Mt. Tom Golf Club, the Holyoke Kiwanis Club and the Harvard Club of New York.

He leaves his widow, Mrs. Bertha Spencer Morse, a daughter and a sister.

Alfred B. Rich

Alfred B. Rich, 64, former division manager of the Dennison Manufacturing Company, Framingham, Mass., died September 4 at the Framingham Union Hospital after a long illness.

He was a native of Saco, Me., the son of Waldo A. and Eliz (Eldon) Rich. He had been with the Dennison company 47 years before retiring a short time ago.

He leaves his widow, Mildred (Karb) Rich; a son, David L.; four daughters, Mrs. Barbara Semenoff of New York city; Mrs. F. W. Whiting and Mrs. Arthur St. J. Whiting, both of Framingham; Mrs. John Pooley of Grinnell, Ohio; a brother, Philip of Framingham; a sister, Miss Margaret Rich of Pittsburgh, and six grandchildren.

Services were held Sunday September 6, at 4 o'clock at the First Parish Unitarian Church.

Thomas J. Hare

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 7, 1942—Thomas J. Hare, president of the Atlantic Paper Company, with offices in the Ledger Building, died at his home on Friday last, after a long illness. Mr. Hare, who was 65, was connected with the Megargee-Hare Paper Company, prior to establishing the Atlantic Paper Company in 1920. The Megargee-Hare Paper Company was one of the pioneer paper houses in this area, and was located at 25 South 6th street.

Mr. Hare, who lived at 168 Summit lane, Cynwyd, is survived by his widow, Regina; a son, Thomas J. Jr., and a daughter, Edwina. Solemn requiem mass will be sung at 10 A.M. tomorrow, at St. Matthias Church, Cynwyd, followed by burial in Holy Cross Cemetery.

Francis J. Arend

Francis J. Arend, founder and president of the De Laval Steam Turbine Company, died August 24, 1942 at the Fitkin Memorial Hospital, Neptune, N. J. He was also president of the De Laval Separator Company.

Mr. Arend was a director of the Marine Midland Trust Company of New York, the Allenhurst, N. J. Bank and Trust Company, the Arex Indemnity Company of New York, and the Fitkin Memorial Hospital. He was also a member of the Sleepy Hollow, Blind Brook, Oakland and Seaview Country Clubs, the Blooming Grove Hunting and Fishing Club of Pike County, Pa., and the New York Athletic and Lawyers Clubs.

Henry P. Slattery

[FROM OUR REGULAR CORRESPONDENT]

Henry P. Slattery, office manager and chief accountant for the Riverside Paper Corporation, Appleton, Wis., for the last twelve years, died Sunday morning, August 23, at his home after an illness of four months.

Mr. Slattery was 47 years old. He is survived by the widow and one daughter, Patricia. He was born April 16, 1895 at Geneva, Ill.

Funeral services were held August 25 at St. Therese church at Appleton with the Rev. M. A. Hauch in charge. Burial was made in St. Joseph cemetery.

George T. Harrison

George T. Harrison, New York sales manager of the Merrimac Paper Company, Lawrence, Mass., died on August 25 at his home in Staten Island, N. Y.

Mr. Harrison had been connected with the Merrimac Paper Company for five years and formerly was connected with the Bulkley, Dunton & Co. in the sales department.

Surviving are his widow and two children.

Robertson Co. Holds Outing

The Robertson Paper Box Company, Montville, Conn., held its tenth annual summer outing at Ocean Beach Park, August 22. It was a most enjoyable occasion and everyone had a splendid time. In the dining hall, after dinner, Employment Service Emblems were awarded as follows: 30 years—John Chop; 25 years—Mark Furber; 20 years—M. Lewitz No. 1 and Alex Weil; 15 years—Stephen Boska, Hubert McFarlane, Clarence Staubley, Mary Rogers, Earl Judge, Archie Fisher and Elsa Rorick; 10 years—John Kotula (In the Army), and Clifford Kumpf; 5 years—Raymond Rioux, Paul McPherson, Mary Stankowich, Catherine Belanger, George Wood, Jr., Lena LaVallie, Arthur Hall, John Tephly, Stanley Klosieski (In the Army), Normand Rioux, Hope Allen, John Levandoski, Edna Calvert, Arthur Paradis, Theodore Allen and Leonard Malinowsky.

The drawing of the lucky numbers for the United States Savings Bonds and Stamps was both interesting and exciting.

Change Newsprint Insurance

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 9, 1942 — The War Shipping Administration has announced that following advices received from the OPA, the War Shipping Administration has withdrawn nominal war risk insurance rates covering the importation of certain commodities, including newsprint and wood pulp. Effective September 1, these shipments take the rates which prevailed under insurances granted by the War Shipping Administration in the month of July.

CANADA WILL ALLOCATE NEWSPRINT ORDERS

(Continued from page 7)

workers in any mill at which, by reason of power shortages, operations have to be curtailed. Close contact will be maintained with the Director of National Selective Service, who has appointed an advisory manpower committee for the industry, including representatives of employees.

"If it is necessary for any particular mill to be restricted in its operations below the level of demand for its product, or to be shut down entirely, arrangements will be made to see that its customers' requirements are met by other mills.

"A special pooling fund is being created into which mills which operate above a basic level will make payments, and out of which mills which are closed down or curtailed in their operations will receive payments in lieu of orders for newsprint. No government funds will be provided. The arrangement calls for financial adjustments within the industry in much the same manner as under the United Kingdom concentration of industry schemes."

The New Newsprint Administrator

R. L. Weldon, of Montreal, appointed Newsprint Administrator under the Wartime Prices and Trade Board, succeeds Charles Nining, formerly president of the Newsprint Association of Canada, who has been appointed head of the newly-created War Information Board.

Mr. Weldon, who is 48 years of age, has been associated with the paper industry since his graduation from university. Born in Winnipeg, he was educated at Winnipeg schools and at McGill University, Montreal.

During 1919-20, he was with the Laurentide Company at Grand'mere, Que., as mechanical engineer, then until 1923 with St. Lawrence Paper Mills at Montreal and Three Rivers. Next he joined the Newfoundland Power and Paper Company as designing engineer, becoming assistant mill manager when the company opened its Corner Brook, Nfld., plant.

In 1928 he was appointed manager, and the following year was elected a director.

From 1930 to 1936 R. Weldon was chief engineer of the International Paper Company and its subsidiaries, New York, and while resident in New York was governor of the Canadian Club.

On reorganization of Bathurst Power and Paper Co., Ltd., in 1936, Mr. Weldon became president and managing director of the company and its subsidiaries.

He is also president of the Canadian Pulp and Paper Association, president of Cascapedia Manufacturing and Trading Co., Ltd., a director of Fleet Aircraft, Ltd., a member of the Engineering Institute of Canada, of the Corporation of Professional Engineers of the Province of Quebec, the American Society of Mechanical Engineers, and the technical section of the American Paper and Pulp Association.

Labor for Woods Operations

Elliott M. Little, Director of National Selective Service, has issued an appeal to farmers to help in relieving an acute shortage of lumbermen during the agricultural off-season now approaching. He said reports had come in that under the new labor regulations men in some sections were leaving logging and lumbering operations through fear that they might not be allowed to move to other seasonal employment.

"I want to make it clear that persons regularly employed in the woods are only required to give seven days' notice before leaving a job," Mr. Little said. "So far as farmers are concerned, they are encouraged to take off-season employment in the bush as well as other places and should not get the notion that because they are not on the farms they will be frozen to jobs they now are in."

More Men Needed to Cut Pulpwood

Large numbers of men are needed in the woods for cutting essential pulpwood and timber. More than 50,000 additional men are needed during September and the needs for woods operations will rise to 110,000 in December. The normal peacetime supply of labor for logging operations is farmers, fishermen and men from construction industry, during the slack season during the winter.

Mr. Little said it was hoped the farmers and fishermen and where possible the construction workers off-season will continue to fill the labor needs during the off-season. Products of the forests are needed urgently not only for Canada's war effort but also the needs of the United Nations.

Latest Development in Power Situation

The latest development in the power situation is a temporary curtailment in the use of primary power by the Saguenay Power Company to the pulp and paper industry in the Saguenay and Lake St. John area. One cause is that due to a day period the flow of water has been reduced and another is the demand for all the power that can be made available for the rapidly-increasing production of aluminum in the huge plant at Arvida. Last year the pulp and newsprint mills of Price Brothers & Co., Lake St. John Power and Paper Company and the Port Alfred mill of Consolidated Paper were called upon to give up the secondary power supplied them by the Saguenay Power Company. It is believed that the call for a further curtailment of power used by the newsprint industry in this area is likely to be only temporary, as rapid progress is being made in a new power development at the Shipshaw rapids. A large block of this power is expected to be delivered by the end of this year, and new blocks will be delivered at intervals thereafter, eventually bringing an additional 510,000 h.p. from this plant.

New Power Developments Under Way

New power developments are proceeding in other parts of the Dominion. Sometime this month the recently-completed Barrett chute plant of the Madawaska river about 75 miles west of Ottawa is expected to be producing about 56,000 horsepower by next month.

At Sault Ste. Marie, Ont., a new unit of about 10,000 horsepower on the lower Montreal river will probably be in operation this fall, and dredging operations at Canada's largest power source—the Beauharnois Light, Heat & Power Company on the St. Lawrence river, are bringing the plant's installations to 689,000 horsepower capacity.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending September 5, 1942

STOCKS	High	Low	Last
A. P. W.	....	....	....
Armstrong Cork Co.	26¼	25¾	26¼
Celotex Corp.	6⅞	6¾	6⅞
Celotex Corp., pf.	70¼	69	69½
Certain-Teed Products Corp.	2	1¾	1¾
Certain-Teed Products Corp., pf.	26	25	25½
Champion Paper & Fibre Co.	15¾	15¾	15¾
Champion Paper & Fibre Co., pf.	96	95	96
Congoleum Nairn Co.	....	....	....
Container Corp. of America	12¼	12	12¼
Continental-Diamond Fibre Co.	6½	6¼	6½
Crown-Zellerbach Co.	11	10¾	11
Crown-Zellerbach Co., pf.	83½	83½	83½
Dixie-Vortex Co.	....	....	....
Dixie-Vortex Co.—A.	36¼	36½	36½
Flintkote Co.	11¼	11	11
Robert Gair	1⅝	1⅝	1⅝
Robert Gair, pf.	9⅛	9	9
International Paper Co.	8⅞	8¾	8¾
International Paper Co., pf.	47	45¾	46½
Johns-Manville Corp.	58¾	57½	58½
Johns-Manville Corp., pf.	125½	125½	125½
Kimberly Clark Corp.	26½	26½	26½
MacAndrews & Forbes	....	....	....
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	26¼	25½	26
Mead Corp.	6⅜	6⅜	6⅜
Mead Corp., pf.	....	....	....
Paraffine Companies, Inc.	....	....	....
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	8½	8½	8½
Rayonier, Inc., pf.	26	26	26
Ruberoid Co.	18¼	17⅞	18¼
Scott Paper Co.	35⅛	33¾	35
Scott Paper Co., pf.	112	111½	112
Sutherland Paper Co.	23	22	23
Union Bag & Paper Corp.	8	7⅛	7⅛
United Paperboard Co.	3½	3½	3¼
U. S. Gypsum Co.	51¾	50½	51
U. S. Gypsum Co., pf.	172	172	172
West Virginia Pulp & Paper Co.	12¾	12½	12¾
BONDS			
Abitibi Pulp & Paper Co. 5s '53	49¼	49¼	49¼
Abitibi Pulp & Paper Co. 5s '53	69⅛	69⅛	69⅛
Celotex Corp. 4½s '47	98¼	97½	97½
Certain-Teed Products Corp. 5½s '48	89½	89	89
Champion Paper & Fibre Co. 4¾s '50	....	....	....
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	104⅞	104¾	104¾
International Paper Co. 5s '47	104¼	103⅞	104¼
Mead Corp. 4½s '55	....	....	....
West Virginia Pulp & Paper Co. 3s '54	104	104	104

New York Curb Exchange

High, Low and Last for Week Ending September 5, 1942

STOCKS	High	Low	Last
American Box Board Co.	4	3⅞	3⅞
Brown Co., pf.	....	....	....
Great Northern Paper Co.	....	....	....
Hummel-Ross Fibre Corp.	3	3	3
National Container Corp.	8½	8½	8½
St. Regis Paper Co.	1⅜	1¼	1¼
St. Regis Paper Co., pf.	110	110	110
Taggart Corp.	....	....	....
BONDS			
American Writing Paper Co. 6s '61	83½	83	83

Bathurst Profits Higher

The Bathurst Power and Paper Company reports that for the six months ending June 30 last the company's profits, after depreciation and depletion and before provision for Dominion income taxes, were $881,282, as compared with $645,203 for the like period of 1941, an increase of $236,079, or 36.6%. Dominion income and excess profits taxes, it is stated, currently are being accrued at assumed rates aggregating 40%, but the final liability for such taxes is uncertain and an adjustment of the tax provision may be necessary before the end of the year. The company's tax liability for the years 1940 and 1941, it is added, likewise is subject to final determination by the income tax division of the Department of National Revenue.

Current assets as of June 30, 1942, amounted to $5,049,605, including cash and marketable securities of $1,673,130. With current liabilities at $1,072,982, net working capital was $3,976,623. This compares with $3,846,305 as of March 31 and $3,649,709 as of December 31, 1941. It is stated that the balance of $150,000 due on purchase money notes was paid off in full in June.

Hummel-Ross Nets 20 Cents

The Hummel-Ross Fibre Corporation, for the twelve weeks to June 13, reports a net income of $87,110, equal after preferred dividend requirements to 20 cents each on 391,706 common shares, against $110,489, or 26 cents a common share, for twelve weeks to March 21 last and $99,269, or 23 cents a common share, for twelve weeks to June 14, 1941. Twenty-four weeks to June 13: Net income, $197,599, or 45 cents a common share, against $255,092, or 60 cents a common share, for 1941 period.

United Wall Paper Profits Up

The United Wall Paper Factories, Inc., for the fiscal year ended June 30, 1942, reports a net income of $551,002, after taxes and charges, equal after preferred dividends to 43 cents a share on 1,188,090 common shares; year ago $325,973 and 24 cents a share; Federal taxes $389,275, compared with $64,593.

West Virginia Earns Less

The West Virginia Pulp and Paper Company and subsidiaries for the nine months to July 31, reports an unaudited net profit, after $3,630,000 provision for Federal income and excess profits taxes, of $2,314,151, compared with $3,382,624 after $1,294,500 for taxes in nine months to July 31, 1941.

Eaton Corp. Calls Bonds

The Eaton Paper Corporation, under date of August 25, has issued notice to bondholders that it will redeem and pay on November 1, 1942, all of its outstanding first mortgage, 10 year, 5¼% bonds, due May 1, 1943.

S. D. Warren Votes Dividend

BOSTON, Mass., September 7, 1942—A dividend of 50 cents per share has been declared payable September 28 to holders of record at the close of business September 19 of the common stock of S. D. Warren Company.

Imperial Earns $4.83

The Imperial Paper and Color Corporation for the year to June 30, reports a net income of $703,538, equal to $4.83 a share on 145,657 common shares, compared with $786,832, or $5.40 a share, in preceding year.

FOR VICTORY TODAY AND SOUND BUSINESS TOMORROW

Get This Flag Flying Now!

This War Savings Flag which flies today over companies, large and small, all across the land means *business.* It means, first, that 10% of the company's gross pay roll is being invested in War Bonds by the workers voluntarily.

It also means that the employees of all these companies are doing their part for Victory . . . by helping to buy the guns, tanks, and planes that America and her allies *must* have to win.

It means that billions of dollars are being diverted from "bidding" for the constantly shrinking stock of goods available, thus putting a brake on inflation. And it means that billions of dollars will be held in readiness for post-war readjustment.

Think what 10% of the national income, saved in War Bonds now, month after month, can buy when the war ends!

For Victory today . . . and prosperity *tomorrow,* keep the War Bond Pay-roll Savings Plan rolling in *your* firm. Get that flag flying now! Your State War Savings Staff Administrator will gladly explain how you may do so.

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PAPER TRADE JOURNAL

CONSTRUCTION NEWS

Under limitations order L-41 all projects involving expenditures of more than $5,000 must be specifically approved by the War Productions Board. The status of projects reported herewith under the provisions of the order is not known.—EDITOR.

Cincinnati, Ohio — The Liberty Paper Stock Company, 1093 West Liberty street, commercial paper products, has completed plans for new addition, on site at Liberty and Dalton streets. Erection will be carried out by day labor and will be placed under way at early date; a number of subcontracts will be awarded for different features of work. Leslie Moss, 4109 Heyward street, Cincinnati, is architect.

Boscawen, N. H. — The Penacook Fibre Company, Boscawen, near Concord, manufacturer of fiber products, is considering early rebuilding of portion of mill, recently destroyed by fire. Reconstruction is expected to cost approximately a like amount.

Kingman, Ariz.—The General Fiber Products Corporation, Los Angeles, Cal., care of Herman L. Joachim, 1151 South Broadway, Los Angeles, consulting engineer, recently organized, has awarded general contract to C. T. & W. P. Stover, 116 North Alexander avenue, Claremont, Cal., for erection of proposed new mill in vicinity of Kingman, recently referred to in these columns. Plant will consist of a main one and multi-story building and several auxiliary structures, and will be equipped to utilize leaves of the yucca plant as raw material under a special process. A machine shop, laboratory, office building and miscellaneous structures also will be erected. Erection is scheduled to begin at early date. It is understood that output will be used by Federal Government, which will provide necessary financing for mill. Engineer noted is in charge.

Minneapolis, Minn. — Durable Box Company, 1110 Emerson avenue, North, manufacturer of egg cases, and other boxes and shipping cases, has awarded general contract to J. A. Johnson, 3119 Second avenue, South, for new addition, for storage and distribution. A building permit has been issued and work is being placed under way.

Brooklyn, N. Y.—The Merit Paper Corporation, 119 Classon avenue, commercial paper products, will make alterations and improvements in storage and distributing building at 110-16 Classon avenue, to be occupied under lease. Company offices, also, will be established at same location. A building permit has been issued and work will be carried out at early date. No estimate of cost announced. Walter L. Uhl, 15 East Fortieth street, New York, is architect.

Pasadena, Calif.—The Shellmar Products Company, 510 South Arroyo Parkway boulevard, manufacturer of cellophane packaging products, has approved plans for new addition to converting plant, location noted. It will be one-story, totaling about 2200 square feet of floor space, and will be used primarily for expansion in storage and distributing department. No estimate of cost has been announced. General erection contract has been awarded to Ray Gerhart, 334 South Greenwood avenue, Pasadena, and work will proceed at once. Harold J. Bissner, 595 East Green street, Pasadena, is architect.

Wooster, Ohio — Steel Storage File Company, 1131 East Bowman street, heretofore specializing in the manufacture of steel filing equipment, has temporarily discontinued such production for the duration of the war, owing to priorities on steel, and is converting plant for the manufacture of corrugated paper board filing units of various kinds. It is expected to resume operations at early date for the new line of production. Plans are under consideration for an addition, to be equipped for assembling service and other branches of output. No estimate of cost has been announced. Walter F. Regenhardt is president.

Louisville, Ky.—The Mengel Company, 1111 Zane street, Louisville, manufacturer of corrugated paper and other boxes and containers, has closed contract with the Government for the construction and operation of a plant in Louisville for the manufacture of certain equipment for war service. Financing will be provided by Defense Plant Corporation, Washington, D. C., a Federal agency. Bids are being asked for erection and work is scheduled to be placed under way soon. Tietig & Lee, 34 West Sixth street, Cincinnati, Ohio, are architects.

New York, N. Y.—Samuel Pasquale, 101 Green street, waste paper products, has leased the entire three-story building at 39 Wooster street, and will occupy at early date for expansion in storage and distribution.

Vancouver, B. C.—The Fraser Valley Fibre Flax Cooperative Association, Surrey, near Vancouver, has plans under way for new flax fiber mill, consisting of a main one-story processing and production building, and auxiliary structure adjoining for storage and distribution. Cost is reported close to $50,000, with equipment. Work is schedued to begin at early date.

Brown Company Directors

At the annual meeting of the voting trustees of the Brown Company, Berlin, N. H., the following new members were elected to the board of directors: H. P. Carruth, vice-president and general manager of the company; J. B. Challies, vice-president of Shawinigan Water and Power Company, Montreal, and Paul A. Draper, Boston, Mass. H. P. Kendall was elected chairman of the board. Mr. Kendall is president of the Kendall Co., Boston, Mass., and Bauer & Black, Inc., Chicago, Ill. The new board members will take places vacated by the following retiring members: William De Krafft, New York; George A. Morris, vice-president and general manager, The Ogilvie Flour Mills Company, Ltd., Canada; and Serge Semenko, vice-president, First National Bank of Boston.

Tinless Tin Cans

Tinless tin cans, "grown" on the farm and cattle range, were announced last week by Raymond S. Macmillan, president of the Macmillan Petroleum Corporation, Los Angeles, as he made public the development through chemical research of the first all-fiber plastic-lined container which is impervious to oil.

The tinless container is produced by direct processing of such surplus crops as corn, other grains, flaxseed, tallow, animal tissues, bone and clay; and the basic fiber is made from straw and waste paper. The result of five years research, the container, according to Mr. Macmillan, "not only helps to meet the immediate crisis in tinplate but will continue as a permanent contribution to packaging."

"The contribution of this development to civilian industry's adjustment to the tinplate shortage is indicated by the fact that the switchover by our company alone from tin cans to the new all-fiber containers will save 10,000,000 pounds of metal in a year. At the same time, production of the containers needed for this single replacement will consume 10,000 bushels of corn as well as substantial quantities of other farm, range and forest products."

Describing the process, Mr. Macmillan said that Mr. Robbins has developed three new compounds, all of them impervious to oil. "One of them is an adhesive used to bind together the 3-ply, spirally wound paper from which the new containers are fashioned, and to cement the tops and bottoms to the cylinder walls. Another is used to fix the labels to the container exteriors. The third and most important is used to coat the interiors. This is a tough and elastic synthetic plastic which prevents leakage of oil even when the containers are subjected to rough handling or to wide temperature ranges. They can be easily opened with an ordinary pocket knife or other moderately sharp instrument.

"The tough and flexible adhesives are made by mixing the ingredients in the right proportions and subjecting them to heat under high pressure in the presence of a catalytic agent. No critical materials are involved and production does not interfere with the synthetic rubber program."

"Our primary interest in the development," Mr. Macmillan concluded, "is that it will continue to make available to consumers lubricating oil that has been packaged and sealed at the refinery."

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Draper Felt **is the bridge to bigger profits for papermakers.**

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RALPH E. BRIGGS, Canton, Mass.

TAPPI Golf at Woodland Country Club

The Fall Meeting General Committee of the Technical Association of the Pulp and Paper Industry recently met in Boston and among other topics discussed was the golf tournament which is usually one of the high lights of any TAPPI gathering. Woodland Country Club—in the suburban Newtons—was chosen as the location, but with our country at war, and the many important problems to be presented at the Convention, it was decided not to have any definite day or hour for the golf tournament. Rather than stop the important meetings for a full half day it was thought best to allow the golfing members and guests to go to the course when they have a few free hours any time on Tuesday, Wednesday, or Thursday, September 29, 30, or October 1. Members of the golf committee will be on hand at all (daylight) hours at the Hotel Statler and the club to arrange for all the details. The TAPPI Permanent Trophy will, of course, be played for in this tournament and as usual there will be low gross and low net prizes, and in keeping with the times War Bonds and Stamps will be given as prizes. There will also be a tournament for the ladies and more definite information of this will be published soon.

Woodland Country Club is not only one of the oldest, but is considered one of the best 18-hole golf courses in the Boston area, and particularly their brick colonial club house is perhaps one of the finest in the east. Large lounge rooms, with two floors of ample locker rooms with showers, a dining room, grill, and cocktail bar offer about all that could be desired in this connection. The course itself of 6203 yards, par 71, has many interesting holes well diversified, with outstanding greens and should certainly be appreciated by all golfers who like to play under ideal conditions.

Woodland is the home club of Francis Ouimet and "Seige Gun" Jess Guilford, both former National Open and Amateur Champions. It is, also, the home club of Ted Bishop, present New England Champion.

The Woodland Railroad Station is on the Club grounds, only 30 minutes from Boston's Huntington Avenue Station, which makes it very convenient to reach—particularly in these times when everyone will be wishing to economize on gasoline and rubber.

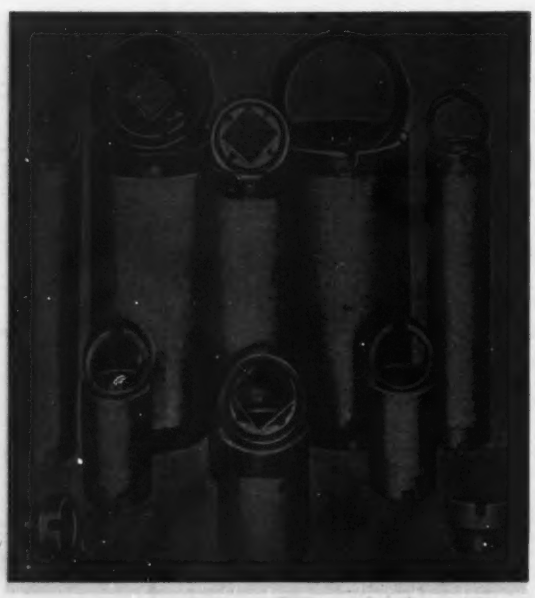
May Make New Wood Products

Canada may benefit by a new method of treating wood by Dr. Monte Wladaver of New York who has been in Ottawa conferring with officials of the National Research Council.

Dr. Wladaver, a former physicist interested in chemistry, has evolved a chemical formula by which logs—of either hard or soft wood—when processed can be made into material "almost as resistant as armor plate or as resilient as rubber."

His formula has been approved by the United States government but what the new material will be used for is a closely-guarded secret.

Dr. Wladaver revealed that plans are under way to open a plant in Canada and the site would necessarily have to be near a source of a supply of logs.



ELIXMAN

CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.

Masonite Distributes Seedlings

For the sixth consecutive year the Masonite Corporation has completed its free distribution of pine tree seedlings to farmers and growers in Mississippi, bringing the grand total to more than 7,000,000, it has been announced by R. G. Wallace, vice president and general manager of the company.

Mr. Wallace said the company, which manufactures wood fibre board products at Laurel, Miss., gave away more than 1,500,000 seedlings this year. One hundred and twenty-two planting demonstrations were held in 13 counties at 122 different schools. These demonstrations were attended by 2,549 persons.

Having launched its tree-planting program in 1936, the Masonite company conducts its reforestation program in close co-operation with governmental agencies, particularly with the Mississippi Forestry Extension Service. The program emphasizes the vital need for planting barren areas, selective cutting, systematic replacement planting, and fire protection. It also contributes substantially to the education of 4-H club members, Future Farmers of America, and individual farmers.

Mr. Wallace said 1942 was the most successful year of the seedling distribution program because more persons received seedlings and attended the demonstrations. Although some concern has been expressed over a possible farm labor shortage in Mississippi, he said the company has purchased another 1,500,000 seedlings to be distributed in the usual manner next year.

For years Masonite Corporation, the largest industrial organization in Mississippi, has been paying growers of the State more than half a million dollars annually for trees that previously had no commercial value.

The company's goal is to educate farmers to the fact that a profitable cash crop of second-growth trees can be produced annually on land formerly regarded as worthless. The growers have a ready market at the Laurel mill which is turning out hundreds of millions of feet of hardboard and insulation products for civilian and military uses.

July Paper Sales Decline

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Sept. 9, 1942—Sales of paper and its products as reported by 98 manufacturers to the Bureau of the Census for the month of July amounted to $6,299,000 showing a 6% decrease in volume over June, and 14% less than sales for July a year earlier. Total sales for the first seven months of this year amounted to $57,671,000 which is 20% more than sales for comparable period last year.

Collection percentages, which are obtained by dividing the collections by accounts receivable, are reported by 84 firms as 67%, compared with 69% for June, and 62% for July, 1941.

A report by the Department of Commerce on sales of wholesalers in 35 trades show a 9% advance in July, 1942 over the same month a year ago. The gain reported in June of this year as compared with June 1941 was 11%. An increase of 5% occurred between June and July of 1942 as against the increase of 7% recorded between these months in 1941. Sales for the first seven months of 1942 were 21% above the corresponding period of 1941.

Which One Is Best For You
A SHEAR CUT OR A SCORE CUT SLITTER?
Let Cameron answer that problem for you. Because we make both shear cut and score cut slitting machines, Cameron engineers can help you to make an unbiased selection. At the same time we can recommend the correct winding method for your job. Write for interesting literature.
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?
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The Trouble-Free, Dollar-Saving Way

to *KEEP ROLLS ROLLING*

NOT just in a figurative sense—but in a practical, money-saving, production-boosting way—the Johnson Rotary Pressure Joint *Keeps 'Em Rolling* in the paper industry.

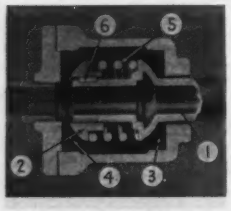
It keeps rolls rolling because it keeps them free from all the troubles of the old stuffing box steam fits. No more packing, or repacking. No more oiling. No more adjusting. No more life-shortening wear or loss of efficiency from misalignment. No more time wasted while machines are shut down to service or replace steam fits. No more worry about syphon drainage pipes rubbing on dryer journals.

Down goes maintenance; up goes production. No wonder so many paper mills have been quick to adopt the Johnson Joint way to Keep 'Em Rolling. Over one hundred mills have purchased 50 or more Johnson Joints; over fifty mills have purchased from 100 to as many as 800.

Write for catalog

Sizes for all Paper Machines, Calenders, and Corrugators

Nipple (1) fastened to roll. Sliding collar (2), keyed (5) to nipple. Carbon graphite seal ring (3) and bearing ring (4), which eliminate packing and oiling. Spring (5) is for initial seating only; in operation joint is pressure-sealed.



MAKES COMPRESSED AIR COME CLEAN

The Johnson-Gast Separator removes more than 99% of all water, dirt, and oil from compressed air—prevents rusting of pneumatic machinery and rapid deterioration of air hose. Also available for service on steam lines. Team mate is the Johnson-Gast Aftercooler, which circulates cooling water around compressed air line to condense all vaporized moisture—so Separator can remove it. Write for bulletin.

The Johnson Corporation

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Glassine and Greaseproof Men to Meet

The technical committee of the Glassine and Greaseproof Manufacturers Association will hold its quarterly meeting at the Hotel Statler, Boston, Mass., on September 28, the day before the official opening of the Fall Meeting of the Technical Association of the Pulp and Paper Industry.

The committee was organized in 1938 and has been extremely active. At the start, only the mills in the eastern part of the country participated. A short time later, a western group was formed, with separate annual meetings. After the second year the two groups combined, and began to hold two meetings each year, one in the east and one in the west. Now quarterly meetings are held.

The group has worked on many problems of vital interest to the pulp and paper industry. One of their most important contributions has been the preparation of a greaseproof test in cooperation with the Technical Association of the Pulp and Paper Industry and which has been adopted by TAPPI as tentative standard T 454 m-42. Several years of research and investigation, which included many possible methods, were conducted before this test was finally written up. At present the group is making investigations in other fields relative to testing and standardization of grades.

The last meeting of the committee was held in Chicago in June and was attended by Ralph Hayward, President, and R. G. Macdonald, Secretary of TAPPI, as well as Major Herman of the Quartermaster Corps of the United States Army.

The present advisory board consists of P. E. Hodgdon, Deerfield Glassine Company, Paul F. Moore, Westfield River Paper Company, Folke Becker, Rhinelander Paper Company and Thomas Donoghue of the Riegel Paper Company.

Chairman of the group is P. S. Barnhart of the Westfield River Paper Company.

Michigan Superintendents to Meet

The next meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents' Association will be held on Thursday, September 17, at the Park-American Hotel in Kalamazoo. Dinner will be served at 6:30 P. M.

Frank Brown, purchasing agent with the Michigan Paper Company at Plainwell, Mich., will be the speaker of the evening. Mr. Brown, who has served as a vice-president of the National Association of Purchasing Agents, will discuss "Purchasing Problems of Today."

Included in the business of the evening will be the report of the nominating committee, followed by the election of officers for the following year.

Paper for Expeditionary Forces

[FROM OUR REGULAR CORRESPONDENT]

PITTSFIELD, Mass., August 24, 1942—The Eaton Paper Corporation disclosed in a bulletin distributed to employees that the company recently received the largest order in its history—35,000 boxes of writing paper to United States expeditionary forces. It disclosed also that 15⅓ per cent of all its June shipments went to the various branches of the army and navy.

Paper Demand Quiet

INDIANAPOLIS, Ind., September 8, 1942—Little change was noticed in the paper market in this section last week. Domestic demand continued quiet and there is little likelihood of any betterment before fall begins in earnest. Some jobbers are none too optimistic concerning the fall demand. The converters and paper factories in this section, however, are keeping busy, most of their output going either directly to the armed forces or to industries making munitions and other similar equipment for the government.

The return of hot weather last week brought an increase in demand for paper and waxed containers from the ice cream and dairy industry. This demand has been fair during the entire summer in spite of the fact that up to the present time temperatures have hardly been as high as is usual. The agitation on the part of state breweries to further demand for the quart bottle instead of the usual 12-ounce bottle, which came about fifty-fifty in wood and paper cartons, has increased demand for the quart container.

Building paper demand continued dull last week. Nor is there any immediate hope for a resumption of anything like last year's business for the remainder of the year. War restrictions have curtailed building rigidly.

Fine paper demand continued poor. Books, ledgers and covers are moving sluggishly and there appears to be no help for the situation. Prices were holding firm last week, however.

Demand for paper bags and wrapping paper held level last week with prospects for an increasing demand when schools and the fall season open. Tissues were moving readily, but demand for summer specialties was dull.

Little change was seen in the paper stock market. Plenty of supplies are in local warehouses and prices were relatively weak. Some demand was seen for better grades of rags with prices firm.

Paper Box Sales Drop

CHICAGO, Ill., September 8, 1942—Although showing a seasonal upturn from July, August orders booked by reporting members of the folding Paper Box Association of America were 21.2 per cent below last year, preliminary data indicated last week. The increase over July of this year was 21.9 per cent.

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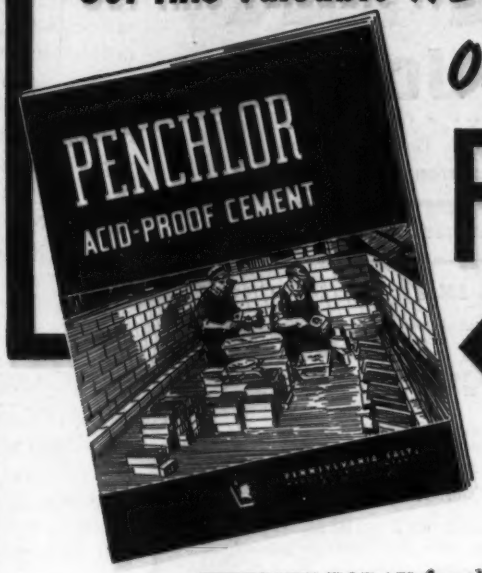

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PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger

EDITOR

Vol. 115 September 10, 1942 No. 11

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Technical Association of the Pulp and Paper Industry, Fall Meeting, Statler Hotel, Boston, Mass., September 29-October 1.

PAPER AND PULP

The effect of the tremendous war effort this country is making upon the trend of American industry has already been very marked. It must inevitably become greater and more intensified the longer the world conflict is continued. One significant result is that, as the production of military goods expands, it exerts a strong pressure to restrict the output of goods for civilian or normal use. Thus the current productive trend clearly indicates the restrictions and curtailment considered essential for increasing the war effort of the country. It probably will entail a very drastic decline in all kinds of non-durable goods, with less durable goods available for civilian requirements. Only the most essential materials and products will be available for non-military uses.

An informative contribution to the industrial status, trend and statistical position of the paper and pulp industry for the first months of the current year, was published by the National Industrial Conference Board for July. The article states that, "Current conditions in the paper and paper board industry are in marked contrast with those of last year. Instead of being hard-pressed to keep up with new orders, mills have been forced to curtail activity substantially as new and unfilled demand has dropped. Mill stocks, on the other hand, have turned upward as shipments have declined faster than production. With this record of experience, comment on the validity of last year's shortage scares is hardly necessary. While it is evident that the industry is capable under present conditions of meeting all nearby paper and paper board requirements, it cannot ignore the threat of labor and transportation shortages, and the problems of obtaining repair and maintenance supplies and equipment."

In its analysis of the recent over-all trend the article says in part: "Combined indexes of new orders and production for printing papers, fine papers, wrapping papers, boards and miscellaneous papers, since May, the latest obtainable, show production has continued to decline . . . The printing paper division of the industry, consisting of uncoated book and groundwood specialties, has been hard hit by the current slump. The index of production dropped to 124 for last May from a peak of 161 for last November, a 23% decrease. It was 10% less than in May, 1941. Indexes of new and unfilled orders have declined more than this amount from their 1941 peaks; the former 42.2% and the latter 58.4%. New orders have not been as great as production since last October, and unfilled orders in May were equal to only about one-half month's production as compared with over a full month's output in July, August and September, 1941. The recent trend has been upward and by May, mill stocks showed a gain of 37% over the low level for last January."

In reference of newsprint the article says in part: "The failure of total consumption to keep pace with the growth in population is at least partly explained by the lag in advertising lineage since 1929. Even in the best peace-time year since the great depression, lineage had a considerable distance to go before reaching the average of the late 'Twenties.' Radio advertising, of course, is taking a much greater share of the advertisers' dollar, particularly national advertisers. . . . Fine paper production has continued at a high level this year, although below last year's peak. . . . Government purchases are an important factor in the demand situation. . . . Orders received moved ahead of production at the beginning of 1941 and continued at a high level through the first quarter of 1942. . . . Apparent consumption of fine papers rose to 10.8 pounds per capita in 1941, and compared with the previous high of 10.2 pounds in 1929."

Commenting on wrapping papers the article states: "New orders have been relatively well maintained, despite a downward trend in retail trade, conservation programs and curtailment in civilian goods production. Some new demand, however, has developed because of shortages in other materials. For the first five months of 1942, new orders were only 11% less than in the same period of last year. Production started to run ahead of new business last September and while unfilled orders for last May were 34% below the 1941 peak. Apparent consumption in 1941 rose to a new high record. It amounted to 39.6 pounds per person as compared with 26.4 pounds in 1940. . . . Paper board production last year showed the greatest increase of any of the major divisions of the industry. Last year's apparent consumption of 123.1 pounds per capita compared with the previous high of 94.6 in 1940. . . . In tissue and absorbent

papers a new high record was established in April. New orders for miscellaneous papers also reached their peak this year and not in 1941, as was true of other papers. Recently, the trend has been downward and production has been above the level of new business."

Referring to pulp production the article says in part: "The all-time high in pulp production was established in March, 1942, and the adjusted index for last May was only 3.2% below that level. At 184, the index was 13.6% higher than in May, 1941, and compared with an average of 116 in 1939 and 81 in 1929. The greatest long term growth has occurred in sulphate pulp production. Last year's peak was 225 in November and December. Indicative of the growth experienced, the average of the index for 1929 was only 43. . . . Sulphite pulp production has also shown substantial long-term growth, but it has been less marked than in sulphate pulp. For last May, the adjusted index stood at 173, a decline of 4.4% from the peak of 181 for last March. . . . Soda pulp has done less well this year and has a more modest growth. For last May, the production index stood at 147, a decline of 12.05% from the 1941 peak of 167."

Bird Machine Co. Builds Addition

The Bird Machine Company, South Walpole, Mass., manufacturer of paper mill machinery, has work under way on new addition, for which general contract recently was awarded to Central Engineering and Construction Company, Pawtucket, R. I.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1942		Corresponding Weeks—1941	
July 25	79.1	July 26	101.9
August 1	79.8	August 2	100.5
August 8	81.6	August 9	99.7
August 15	79.8	August 16	99.0
August 22	80.5	August 23	102.8
August 29 (Prelim.)	*82.8*	August 30	102.4

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1941	85.6	89.7	92.2	96.0	98.7	99.3	94.2
1942	104.5	103.9	102.9	100.3	95.4	87.3	*75.7*

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1941	101.0	99.7	105.2	106.2	100.4	97.4
1942	*81.1*	....	....	....	....	....

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941	1942
Year to Date	68.4	78.0	87.1	68.8	78.8	86.8	94.5	*93.6*
Year Average	69.9	80.4	79.8	71.5	83.4	85.6	97.4	....

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	60	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	*75*	..	..	..	..	..

Week ending July 25, 1942—74
Week ending Aug. 1, 1942—76
Week ending Aug. 8, 1942—75
Week ending Aug. 15, 1942—73
Week ending Aug. 22, 1942—74
Week ending Aug. 29, 1942—77

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Wire and Felt Sides of Paper

Revision of TAPPI Suggested Method T 455 sm-42

The wire side of paper is the side that was in contact with the wire of the paper machine; the other side is termed the felt side. It is desirable to have means of distinguishing between the two sides because they generally differ in some physical characteristics. It is not always possible to make the distinction, this being particularly true of coated and other surface-treated papers, certain high-grade papers made from well beaten rag stock, and specialties made with variations in the usual paper-machine practice. When one of the following procedures does not give a definite indication it is advisable to try one or more of the other procedures.

Procedures

1. Fold over a sheet of the paper and observe the relative smoothness of the two sides. Ofter the pattern of diamond-shaped impressions of the machine wire can be seen, thus identifying the wire side. In viewing the paper, it should be held in a horizontal position with the light striking it at an angle of about 45 degrees and with the line of vision of the eye also at an angle of 45 degrees to the surface of the paper. Observation with a microscope is helpful.

2. Dip the paper in water or in a weak caustic soda solution, drain off the excess liquid, allow to stand a few minutes, and again examine the two sides. This treatment tends to restore to paper the texture it had on the machine wire. View as described in 1.

3. Hold a sheet of paper in one hand in such a way that the grain (machine) direction is parallel to the line of vision and the sheet surface is approximately horizontal. Holding the sheet in this position with one hand, pull upward with the other to start a tear in the sheet so that the line of tear follows the grain of the paper. As the tear is being made, gradually guide it so that it moves in the cross direction and toward the outer edge of the sheet, producing a tear line following a curved path. Turn the sheet over so that the opposite side is uppermost and make a similar tear in the sheet. Observe the feathering caused by the splitting of the sheet at the edge of the two tears which have been made. One of these tears will show a distinct feather edge as compared to the other, especially in the curved portion where the line of tear departs from the grain or machine direction and moves toward the cross direction. The tear with the more feathered edge is always made when the wire side of the sheet faces upwards.

This procedure is very useful as it often gives a positive determination when the other simpler procedures fail. The successful use of it, however, requires a certain amount of experience and it is recommended that such experience be gained by applying it to papers of known wire side and felt side.

4. Cut specimens approximately 1 inch wide and 2 inches long, with the long dimension at right angles to the machine direction of the paper. Place the specimens in a drying oven at approximately 100° C. or in a desiccator over a suitable drying agent, such as anhydrous calcium chloride. It is essential that both sides be exposed alike to the drying air, and they must be suspended or otherwise held so that they can curl without restraint. The direction of curl under these conditions will furnish a reliable means of distinguishing between the two sides of most papers. On drying, any pronounced curl of the specimens will be toward the wire side with the axis of the curl parallel to the machine direction of the paper.

REPRINT NOTE: Reprinted TAPPI Suggested Method T 455 sm-42 may be obtained from the Technical Association of the Pulp and Paper Industry, 122 East 42nd St., New York, N. Y., at 25 cents each.

Howard Smith Heads Association

MONTREAL, Sept. 7, 1942—E. Howard Smith, vice-president of the Howard Smith Paper Mills, Ltd., has been elected president of the Canadian Pulp and Paper Association, succeeding R. L. Weldon, who has been appointed Newsprint Administrator of the Canadian Government, it was announced here today.

Mr. Weldon automatically becomes senior vice-president, on leave of absence, of the association. His duties will be performed by C. W. Whitehead, vice-president of the Consolidated Paper Corporation, who has been elected special senior vice-president.

To Be Post-War Planning Head

Donald Johnson Hardenbrook has been appointed postwar planning manager by Union Bag and Paper Corp. In making the announcement, Alex Calder, president, said Mr. Hardenbrook's assignment would be to study "social, political and economic changes and their possible effect on all departments of our company." The holder of the new position until recently was chairman of the Institute of Applied Econometrics.

Analysis of Sulphate White and Green Liquors

TAPPI Tentative Standard T 624 m-42

This method deals with the analysis of both white and green liquors in the sulphate process. The smelt from the recovery furnaces is dissolved to form the green liquor and this is subsequently chemically adjusted to give white liquor for reuse in the cooking process.

The composition of sulphate liquors tends to change on standing, especially if access to the air is permitted. While storage in completely filled and stoppered bottles serves to arrest such change, the tendency should be kept in mind, and, in general, the analysis should be started and carried through without delay after sampling in order that results shall have maximum significance.

Use recently boiled and cooled distilled water for all dilutions of the liquor sample throughout the analysis.

Report all results of chemical determinations in terms of grams per liter at 20° C. or, if required, in percentage by weight, to three significant figures. (Grams per liter divided by 10 times the specific gravity gives percentage by weight.)

Gravity

Determine the Baumé gravity of the sample at 60° F. by means of a suitable hydrometer. Convert to specific gravity at 20° C. by the following approximate formula:

$$\text{Sp. gr.} = \frac{145}{145.2 - \text{Bé.}} \text{ at } 60° \text{ F.}$$

Report the result to three significant figures.

Note: For maximum accuracy, determine the specific gravity at 20° C. by means of a pycnometer, compared with water at the same temperature.

Sodium Sulphate

Pipet 25 ml. of the original liquor into a 250-ml. breaker containing about 25 ml. of water and a few drops of methyl orange indicator solution. Add sufficient dil. HCl (1:6) to neutralize the sample and to provide an excess of about 5 ml. Guard against mechanical loss due to gas evolution by covering the beaker with a watch glass and adding the acid slowly through the opening between the watch glass and the lip of the beaker. With a stirring rod in place, gently boil the solution for about 10 minutes to remove all CO_2 and H_2S. Filter off the coagulated sulphur and other insolubles and wash the residue on the filter paper thoroughly with water, collecting the filtrate and washings in a 400-ml. beaker. Dilute the solution to about 250 ml. and, with a stirring rod present to minimize the danger of bumping, heat to boiling. To the briskly boiling solution add dropwise and with stirring 15 ml. of 10% $BaCl_2$ solution. After partial settling, using a clean glass rod, add a drop of the mixture to a few milliliters of dil. H_2SO_4 in a test tube. If no precipitate is observed, add more $BaCl_2$ to the original solution and again check to insure that an excess is present.

Maintain the solution near the boiling temperature for 10 to 15 minutes and then set aside to settle and cool for at least 1 hour. Filter through a close-grained, ashless filter paper and wash the precipitate on the filter with warm water until the wash water, acidified with HNO_3, gives no test for chloride with $AgNO_3$. Remove the filter paper and precipitate to a weighed porcelain or platinum crucible and heat over a burner or in an electric muffle furnace. The initial heating should be done very slowly to avoid spattering during drying and should be continued at a slow rate until all carbonaceous material has been volatilized without flaming. Finally ignite for 15 to 20 minutes at about 800 deg. C., cool in a desiccator and weigh. Repeat the ignition until the weight is constant. As a check against possible reduction of some of the $BaSO_4$ during ignition, moisten the ignited residue with a few drops of dil. H_2SO_4 and again heat, cool and weigh. Calculate the weight of $BaSO_4$ thus found to Na_2HO_4 and express as grams per liter.

Calculation: Grams of $BaSO_4 \times 0.6086 \times 40 =$ grams of Na_2SO_4 per liter.

(*a*) Total Alkali

Pipet 25 ml. of the original liquor into a 500-ml. volumetric flask partially filled with CO_2-free distilled water and dilute to the mark.[1] Mix thoroughly and remove a 50-ml. aliquot with a pipet for each titration. Add 5 ml. of furfural and titrate with 0.5 *N* acid (HCl or H_2SO_4), using methyl orange indicator. The volume of acid required represents the Na_2O content of all the NaOH, Na_2S, and Na_2CO_3, and of one half the Na_2SO_3. Denote this volume of 0.5 *N* acid in cc. as *A*.

(*b*) Active Alkali (NaOH *and* Na_2S)

Pipet 25 ml. of the original white liquor into a 500-ml. volumetric flask partially filled with CO_2-free distilled water and add 25 ml. of 10% $BaCl_2$ solution. (In the case of a green liquor, place the 25-ml. sample in a 250-ml. volumetric flask containing about 75 ml. of water and add 100 ml. of the $BaCl_2$ solution.) After partial settling, using a clean glass rod, add a drop of this mixture to a few milliliters of dil. H_2SO_4 in a test tube. If no precipitate is observed, add more $BaCl_2$ to the solution and again check to insure that an excess is present.

Dilute to the mark, mix thoroughly and set aside for the precipitate to settle. Carbonate, sulphate and sulphite are thus removed from the solution. For each titration draw off 50 ml. of the clear, supernatant solution with a pipet. Titrate this in a flask with 0.5 *N* acid, using methyl orange indicator. De-

[1] This solution may also be used for the determination of total sulphur.

Reprint Note: Reprints of TAPPI Tentative Standard T 624 m-42 may be obtained from the Technical Association of the Pulp and Paper Industry, 122 East 42nd St., New York, N. Y., at 25 cents each.

note the volume in milliliters of acid required as B.

The difference between titrations A and B (for the same volume of original liquor) represents the complete neutralization of the Na_2CO_3 and the conversion of whatever Na_2SO_3 was present to $NaHSO_3$.

(c) CALCULATIONS

From the titrations A and B with 0.5 N acid the calculations in terms of grams per liter are as follows:

(1) Total alkali (Na_2O) $= A \times 0.0155 \times 400$.
(2) Active alkali (Na_2O) $= B \times 0.0155 \times 400$ (for white liquor).
(3) Active alkali (Na_2O) $= B \times 0.0155 \times 200$ (for green liquor).
(4) Caustic alkali (NaOH) = [Active alkali—($Na_2S \times 0.7941$)] $\times$ 1.290.
(5) Sodium carbonate (Na_2CO_3) = [Total alkali—Active alkali—($Na_2S \times 0.246$)] $\times$ 1.710.

The values for the Na_2S and Na_2SO_3 contents employed in the above are those determined iodometrically as described in the following section.

NOTES

(1) For routine mill-control tests, when the added degree of accuracy afforded by the iodometric or argentometric methods does not justify the additional time and labor involved, a fairly reliable measure of the Na_2S content of the liquor may be obtained by the double titration method. The titration in (*b*) on the carbonate- and sulphite-free solution is first carried out to the phenolphthalein end point. Having noted the volume of acid required to this point, which may be designated as B', a few drops of methyl orange indicator solution are added and the titration continued to the methyl orange end point. The difference in titration with 0.5 N acid to the two end points corresponds, approximately, to the conversion of the bisulphide to H_2S, and the calculations for white liquor are:

(1) $Na_2S = 2(B—B') \times 0.0155 \times 400$.
(2) $NaOH = (2B'—B) \times 0.0200 \times 400$.

For green liquor, substitute the dilution factor of 200 for the 400 in the above equations.

(2) The procedures given do not provide for the disturbing effects of sodium silicate and the values so found for NaOH will be correspondingly high. The extent of such interference may be estimated from the silica determination.

Reducing Agents

(a) SODIUM SULPHIDE, SULPHITE, AND THIOSULPHATE

Pipet 25 ml. of the original liquor into a 500-ml. volumetric flask, dilute to the mark and mix thoroughly.

Make the following preliminary tests, each on a 10-ml. aliquot of the above solution: (1) Add a few drops of phenolphthalein indicator solution and then add slowly from a small graduate sufficient dil. acetic acid (2:5) to neutralize the alkalinity and discharge the pink color, and record the amount. (2) Add a few drops of starch solution to the second 10-ml. aliquot and titrate with 0.1 N iodine solution until a blue color appears. Record the amount.

Run from a buret into a 250-ml. Erlenmeyer flask an amount of 0.1 N iodine equivalent to 5 times the amount required in preliminary test (2) and then add between 5 and 10 ml. excess. To this add 5 times the amount of dil. acetic acid required by test (1) and a few milliliters excess. Pipet 50 ml. of the solution of the sample into the acidified iodine solution and back titrate with 0.1 N thiosulphate solution, adding a little starch solution when the iodine color becomes pale and then continuing the titration to the disappearance of the blue color. The difference between the total iodine solution added and the excess determined by the back titration represents the total of $Na_2S + Na_2SO_3 + Na_2S_2O_3$ present in the aliquot titrated. Denote this as A.

(b) SODIUM SULPHITE AND THIOSULPHATE

Pipet 100 ml. of the original liquor into a 1000-ml. volumetric flask, add 50 ml. of glycerol and precipitate the sulphide by the addition of an excess of a freshly prepared suspension of $ZnCO_3$, made by adding at room temperature and with constant stirring, 300 ml. of 10% Na_2CO_3 solution to a solution of 60 grams of $ZnSO_4.7H_2O$. Add sufficient water to fill the flask ½ to ⅔ full, shake and let settle. Withdraw a drop of the clear liquid on a long stirring rod and test it with lead-acetate paper for complete removal of sulphide. If the drop darkens the paper, add more $ZnCO_3$ suspension to the flask, shake, and repeat the test. When absence of sulphide is shown, dilute the contents of the flask to the mark, mix thoroughly, and let settle.

If, after settling, the upper part of the solution is not clear, or if the precipitate is so voluminous that a sufficient number of 100 ml. portions of clear liquid cannot be removed for subsequent titrations, filter the mixture through a dry filter paper. The presence of glycerol effectively retards oxidation of sulphite by the air, which otherwise would occur in the filtering operation. Pipet a 100-ml. portion of the clear liquid into acidified 0.1 N iodine solution as described in paragraph (*a*) above. The proper amounts of iodine and acetic acid must again be predetermined by a preliminary test on 10 ml. of the liquid. A much smaller amount of iodine and a much larger quantity of acetic acid will be required than before. Determine the excess iodine by titration with standard thiosulphate solution as above. Denote this as B ml.

From the amount of iodine reduced by the aliquot (A), the total equivalents of sulphite and thiosulphate in the original liquor may be calculated. The difference between A and B (corrected to the same volume of original liquor) represents the concentration of Na_2S.

(c) SODIUM THIOSULPHATE

To another 100-ml. aliquot of the clear sulphide-free solution described above, add an excess of formaldehyde to convert the sulphite to an aldehyde-sulphite compound which in acid solution is not attacked by iodine (or only very slowly). Five ml. of formalin (40% formaldehyde) will be sufficient. Then add the same quantity of acetic acid and the same quantity of 0.1 N iodine solution as used in paragraph (*b*). Add starch indicator and immediately back-titrate with 0.1 N thiosulphate. The iodine solution consumed, which is denoted by C ml., represents the thiosulphate present in the aliquot; and the difference between B and C then represents the sulphite.

(d) CALCULATIONS

From the quantities A, B and C of 0.1 N iodine solution consumed in the titrations described in the preceding sections *(a)*, *(b)* and *(c)*, the calculations in terms of grams per liter are as follows:

(1) Sodium Sulphide (Na_2S) $= (4A—B) \times 0.00390 \times 100$.
(2) Sodium Sulphite (Na_2SO_3) $= (B—C) \times 0.00630 \times 100$.
(3) Sodium Thiosulphate ($Na_2S_2O_3$) $= C \times 0.0158 \times 100$.

(e) ALTERNATIVE METHOD FOR SODIUM SULPHIDE

In cases where sulphite and thiosulphate are not to be determined, the determination of sulphide by

titration with standard ammonical silver nitrate solution may conveniently be employed. This direct method may also serve as a check on the iodometric determination.

Standard ammoniacal $AgNO_3$ solution: Dissolve 87.07 grams of C.P. $AgNO_3$ in water and add 250 ml. of conc. NH_4OH. Accurately dilute to 1000 ml. in a volumetric flask. Protect the solution from light and heat. One ml. of this solution is equivalent to 0.02 gram of Na_2S.

Procedure: Pipet 25 ml. of the original liquor into a 400-ml. beaker. Without dilution, run in standard ammoniacal $AgNO_3$ solution from a buret until the equivalence point has been approached as closely as can be estimated. Shake or swirl the contents of the beaker vigorously until the Ag_2S separates in lumps, leaving a fairly transparent, light brown solution. With the beaker held over a white background to facilitate end point detection, add another drop of reagent from the buret. If a precipitate forms locally where the drop enters the solution, continue the titration with small additions of $AgNO_3$ solution, shaking vigorously and testing after each addition in the above described manner until no further precipitate forms. The final additions of reagent should be made a drop at a time and the end point taken as corresponding to the last drop producing a detectable turbidity in the solution.

If the number of milliliters of $AgNO_3$ is designated as E, the calculation of Na_2S in terms of grams per liter is: $Na_2S = E \times 0.02 \times 40$.

Note: If the end point is overrun in the first place, no amount of shaking will produce proper coagulation of the Ag_2S. Sulphite, thiosulphate, sulphate, carbonate or hydroxide does not interfere with the determination.

Total Sodium

Pipet 5 ml. of the original liquor into a 100-ml. beaker. Adjust to approximate neutrality with dil. HCl, wash through a filter into a 100-ml. volumetric flask and dilute to the mark. Remove one-ml. aliquots for each determination with an accurate pipet and proceed according to TAPPI Method T 623 m, Determination of Sodium by the Uranyl Zinc Acetate Method. Multiply the weight of the precipitate in grams by 299 to obtain Na or by 403 to obtain Na_2O, each in terms of grams per liter.

Total Sulphur

Pipet 25 ml. of 20-fold diluted liquor, prepared as described under Total Alkali, into a 400-ml. beaker. Add 5 ml. of 30% H_2O_2, cover with a watch glass and warm. When the evolution of gas abates, continue to heat the solution, finally bringing it to a boil for a few minutes. Cool and neutralize to methyl orange with HCl, finally adding one ml. of concentrated acid in excess. If on acidification a turbidity of free sulphur is formed, or if the odor of H_2S is at all evident, the sample must be discarded and a second determination made employing a more intensive peroxide treatment. Dilute to about 250 ml., heat to boiling and proceed as in the determination of Sodium Sulphate.

Calculation: Grams of $BaSO_4 \times 0.1373 \times 800$ = grams of total S per liter.

Silica

Pipet 50 ml. of the original liquor into a porcelain casserole or platinum dish and cautiously add an excess of HCl. Evaporate to dryness and bake the residue for an hour at about 110° C. Moisten the residue with 10 ml. of conc. HCl, add about 100 ml. of hot water and boil the solution gently for a few minutes, making sure that the residue is completely disintegrated. Filter through a fine-grained, ashless filter paper, scrubbing the walls of the vessel with a rubber policeman and transferring the insoluble residue quantitatively to the filter. Wash the residue on the filter thoroughly with warm dil. HCl (1:20) and finally once with water, reserving the filtrate and washings for the determination of aluminum and iron oxides if required. Transfer the filter paper and residue to a weighed porcelain or platinum crucible. Gently burn off the paper and finally ignite strongly to constant weight at a temperature of 900° C. or more. Cool in a desiccator and weigh quickly.

Calculation: Grams of residue $\times$ 20 = grams of SiO_2 per liter.

Note: To obtain more accurate results, the difference in weight of the ignited residue before and after volatilization of the silicon as SiF_4 should be taken as the weight of SiO_2 present. The use of a platinum crucible is necessary for this treatment. Moisten the weighed residue as obtained above with one to two ml. of water, add 4 or 5 drops of dil. H_2SO_4 (1:2) and then, carefully, about 5 ml. of HF. Evaporate off the latter under a hood without boiling the liquid. When only H_2SO_4 is left, increase the heat and fume it off, finally igniting for about 15 minutes at the full heat of a Bunsen or Tirrill burner. Cool and weigh the crucible. The difference in weight is the SiO_2 originally present.

Aluminum and Iron Oxides

Dilute the filtrate from the SiO_2 determination to about 200 ml., add a few drops of methyl red indicator solution, and bring to a boil. Neutralize the solution by dropwise addition of conc. NH_4OH until it turns yellow and then add a drop or two in excess. This procedure gives the desirable requisite concentration of NH_4Cl (about 3 grams for each 100 ml. of solution). Let stand until the precipitate has completely coagulated, filter through a quantitative filter paper, transferring the precipitate quantitatively to the filter, and wash thoroughly with hot water Transfer the filter paper and precipitate to a weighed porcelain or platinum crucible, heat slowly to dry and char off the paper, then finally ignite strongly. Coo and weigh as $Al_2O_3 + Fe_2O_3$.

Calculation: Grams of ignited oxides $\times$ 20 = grams of $Al_2O_3 + Fe_2O_3$ per liter.

Note: The respective amounts of Fe and Al present ma be determined by analysis of the mixed oxides by colori metric estimation of iron following fusion in potassium bi sulphate. However, since the weight of the mixed oxides i substantially due to alumina, iron compounds being practicall insoluble in the original alkaline liquor, usually this furthe analysis will not be required.

Gould Pumps for Southland Mill

More than 25 centrifugal pumps are under construction by Goulds Pumps, Inc., Seneca Falls, N. Y., for the new three-million-dollar addition to the Lufkin, Texas, mill of Southland Paper Mills, Inc. This new addition, like the six-million-dollar parent plant, the first to produce newsprint from Southern Pine, will be equipped thoroughout with Goulds Pumps exclusively.

The pumps will handle white, green, black and weak liquors, recovery furnace dust, sulphate stock up to 5½%, hot sulphate stock, white water, fresh water and hot water at temperatures up to 260 deg. F.

The Measurement of Greaseproofness

By E. A. Georgi[1] and Philip Nolan[2]

Abstract

A photoelectric method has been developed for both rapidly and accurately measuring the volume rate of flow of oil and the volume after a given time through greaseproof papers under specific conditions. The theory of the volume rate of flow through greaseproof sheets is developed on the assumption that the flow can be represented by flow through a number of individual capillaries in parallel. The theoretical dependence of volume rate on viscosity of penetrant and applied pressure was checked experimentally.

Contact angles of turpentine and lard oil were measured for both glassine and greaseproof papers and angles as large as 20 degrees were found for lard oil on glassine with small but finite angles measured for lard oil on greasproof sheets treated with starch, wax, or resin. The importance of the finite contact angles in the judgments of greaseproofness based on the appearance of the sheets is associated with spreading of oil on the surface of the sheet. It is found that variations of the contact angles of chemically treated greaseproof papers are large enough to account for inversion of order in ranking samples for greaseproofness at low and accelerating pressures.

The initial volume rates employing lard oil correlate poorly with the turpentine times determined by the Glassine and Greaseproof Manufacturers' Association's turpentine test. This poor correlation is accounted for by the greaseproof preference of two sheets having the same volume rates of flow but one sheet possessing a few large capillary failures as compared with a large number of small ones for the other sheet.

The range of rates of flow in the present series of samples is from 1000 mg. to less than 0.003 mg./60 sq. cm./min. for lard oil, the latter being the limit of sensitivity of detection of the apparatus. This lower limit of sensitivity corresponds roughly to rates for samples of about 1000 seconds turpentine times, which means that samples of highest greaseproofness cannot be distinguished from each other but must be classed only as having rates lower than the above limit.

The general property of greaseproofness is defined as the resistance of paper to penetration by grease and oil. The Glassine and Greaseproof Manufacturers' Association's definition is more specific: "Greaseproof paper is a paper processed to the point where it shows measurable resistance to grease penetration as indicated in seconds by the Glassine and Greaseproof Manufacturers' Association's Standard Turpentine test." Because of this definition, it would seem that the satisfactory measurement of the time in seconds for the standard turpentine test would be an adequate measure of greaseproofness. Various causes originally led to dissatisfaction with this measurement and the work of the Glassine and Greaseproof Manufacturers' Association in the last five years has improved the standard turpentine test. The purpose of the present work was the development of an objective measurement of greaseproofness. The Hercules Powder Company was contacted by the Glassine and Greaseproof Manufacturers' Association in regard to the possibility of the use of their fluorescent size tester as a means for measuring the penetration of oils through paper. Experiments showed that measurements could be made by the fluorescent size tester *(1)*, but the method did not seem practicable because of low intensity of fluorescence of the oil and dye mixture and the generally slow penetration. Work was suspended on application of this instrument to the problem and further work was carried out in search of a better method. It was decided that a proper and rapid method for measuring the actual volume rate of flow *(2, 3)* through greaseproof paper for a given applied pressure should be developed from which the resistance to flow could be derived, thus serving to evaluate other indirect measures of greaseproofness in terms of the basic rate of flow.

There are three general methods available for imparting grease resistance to a sheet: they include beating, calendering, and special chemical treatments. The normal greaseproof sheet is obtained by manufacture of a dense, well-closed sheet from a highly beaten stock. To produce a glassine of a high degree of transparency, calendering is necessary, which results in good closure except for sizable pin holes. The types of special chemical treatments include starch, wax and resins. The major factors in the judgment of greaseproofness include the appearance of the sheet, the appearance of the product which is wrapped and the appearance of test papers or other surfaces in contact with the greaseproof sheet. The appearance of the greaseproof sheet itself is rated in terms of the number and diffuseness of the failure spots. This judgment of the relative importance of size and number of failure areas varies with the individual observer and it, together with the other factors mentioned above, are the main reasons that there is no satisfactory test for greaseproofness today.

As a result of the work carried out in the study of the applicability of the fluorescent size tester, the concept of failure pattern of greaseproof sheets was developed. This failure pattern is described as the overall distribution of failure points corresponding to the penetration of oil or grease through the sheet under externally applied pressure. After a short experience in observing the penetration of oils through sheets under pressure, the definite feeling of the complete development of a typical failure pattern is obtained. This failure pattern shows that the so-called large pinpoint failures of both glassine and greaseproof papers should be considered as characteristic of the sheet, when considered as a whole, rather than erratic fluctuations which are not at all characteristic of the paper and are therefore removed from consideration in testing. It is readily appreciated that, in the transfer type of failure in which the packaged products or the surface in contact with the sheet is

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[2] Research Associate, The Institute of Paper Chemistry, Appleton, Wis.

important, the large pinpoint failure will result in obvious and objectionable failure of the greaseproof paper and, for purposes of test, should not be discarded. Typical failure patterns of glassine and greaseproof papers are reproduced in Fig. 1. For glassine papers, failure patterns generally develop rapidly, whereas for greaseproof papers, such patterns develop slowly and change in appearance over a long period of time due to spreading of the oil or grease, as well as to diffusion of the oil away from the central failure point or capillary. This observation leads to the fact that, when lard is used as a penetrant, the greaseproof sheet will become uniformly greasy or oily in appearance after several days, whereas glassine sheets will appear only locally spotted with oil even after this long period of time. This phenomenon accounts for the change in ranking for greaseproofness of a series of sheets judged at early times after application of lard or grease as contrasted with the ranking after an extremely long penetration time.

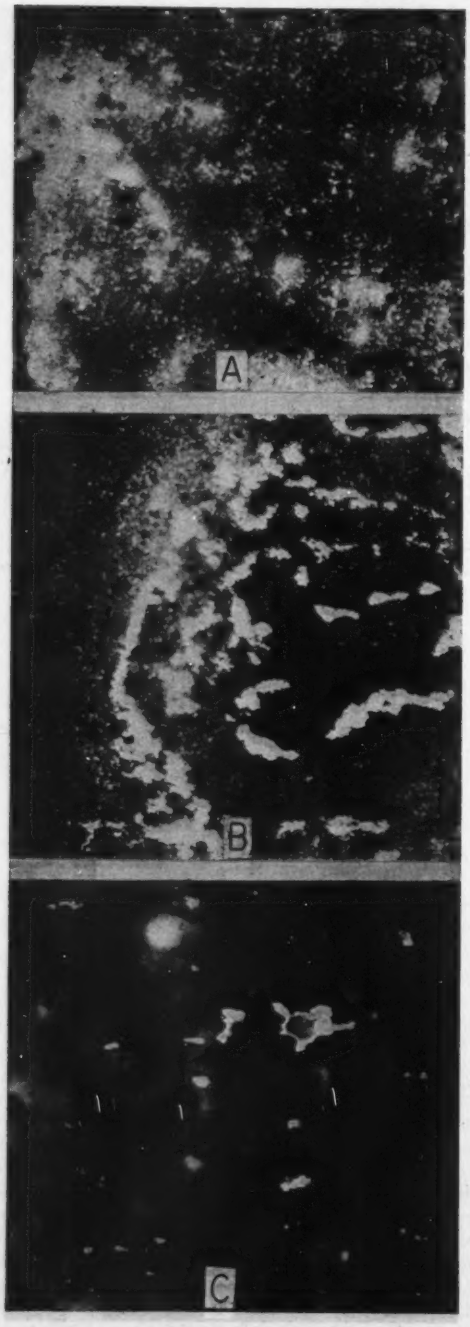

FIG. 1
Failure Patterns of Greaseproof and Glassine Papers. A. Unbleached Greaseproof. B. Bleached Greaseproof. C. Glassine

A greaseproof test, like most other paper tests, should be useful both for control and for specification purposes. The test method should be objective, should accurately define the property measured, should be rapid and convenient, and should predict the probability of failure of a sheet in practice. Obviously, different types of failure may occur. Considering the demands on the test, it is desirable to develop the theory covering the flow of oil through a greaseproof sheet; this development is discussed in the following section.

The Theory of Flow of Oil Through a Greaseproof Sheet

General Expression for Volume Rate of Flow

The observations which led to the idea of a failure pattern showed that the flow of oil through a greaseproof sheet could be considered to be the flow through a number of capillaries in parallel both for glassine and for greaseproof sheets, at least for early penetration times. The general equation of flow can be stated in words as follows: The difference in pressure across the sheet is equal to the product of the volume rate of flow and the resistance of the sheet to penetration. The resistance to flow for a given paper may then be calculated from the pressure difference and the measured volume rate of flow. The equations of flow through both filled and unfilled capillaries are employed in deriving the expression for the volume rate *(2)*.

The expression for the *volume of flow into unfilled capillary is*

$$V_1 = 0.5\ \pi\ R^3\ \sqrt{Pt/\eta}\ , \qquad (1)$$

in which

V_1 = volume of oil (in cc.) in incompletely filled capillary,
R = capillary radius in cm.,
t = time of flow in sec.,
P = total pressure difference in dynes/sq. cm., equal to sum of applied and capillary pressure, and
η = viscosity in poises.

The equation for the *volume of flow through a filled capillary is*

$$V_2 = [\pi R^4 P\ (t\text{-}tc)]\ /\ (8\eta L) \qquad (2)$$

where

V_2 = volume of oil in cc.,
R = capillary radius in cm.,
P = total pressure difference in dyne/sq. cm.,
t = time of flow in sec.,
t_c = time required to fill capillary in sec.,
η = viscosity in poises, and
L = length of capillary in cm.

Equation 3 gives the general expression for the volume rate of flow through the filled capillaries for any given time t, in which the expression is zero for times less than t_{c1} and is valid when the resistance to flow at the exit end of the capillary on the top side of the sheet is negligible.

$$V = \sum_{i=1}^{N} [N_i \pi R_i^4 P (t - t_{ei}) \Delta R_i] / 8 \eta L \qquad (3)$$

where

V = total volume (in cc.) flowing through several capillaries,
N_i = number of capillaries per unit difference in radius,
R_i = radius of capillaries in interval between R_i and $R_i + \Delta R_i$,
P = total pressure difference in dynes/sq. cm.,
t = time of flow in sec.,
t_{ei} = time to fill capillary of radius R_i in sec.,
η = viscosity in poises, and
L = length of capillaries in cm.

Another equation for the volume rate of flow which applies to an instrument for the measurement of this volume rate, will be given later as well as further discussion of the resistance to flow on the top side of the sheet. From the consideration of Equation 3 it is found that the resistance corresponding to long time is expressed by the equation

$$(8\eta L) / (\Sigma \pi R_i^4 N_i \Delta R_i), \qquad (4)$$

which shows that, for long times, the resistance of the sheet depends only on the number, lengths, and radii of the capillaries, in addition to the viscosity of the penetrant. This corresponds to the fact that one should observe a straight line for the volume of flow versus time for times long compared with that required to fill the capillaries.

Capillary Diameter and Shape of Volume-versus-Time Curves

The effect of distribution in capillary size on the shape of the volume-versus-time curves is shown in Fig. 2, in which three different capillary distributions and the theoretical volume-versus-time curves are illustrated. It is interesting to note that the shape of the foot of the volume-versus-time curves depends on the capillary distribution and that the volume of the capillaries of the sheet can be obtained by extrapolating the linear portion of the volume-versus-time curve back to zero time.

Contact Angle of Penetrant

Up to this point it has been assumed that the oil is removed from the top side of the sheet in order to provide zero resistance to flow at this surface. When this is true, the contact angle of the penetrant appears only in its effect on the time required to fill the capillaries. The measurement of this time (critical time) can be used as a measure of the wettability or contact angle, employing Equation 1 when the capillary pressure is included in the total pressure, but only an average capillary pressure will be obtained corresponding to the average of $2T \cos O/R$ (where T is the surface tension). This question of contact angle is of extreme importance when considering the appearance of a sheet in the judgment of greaseproofness. It has been found that the contact angle is zero for lard oil, castor oil, and turpentine on chemically untreated greaseproof papers which have not been supercalendered. However, for greaseproof papers which have been treated with starch, wax, or resins, contact angles different from zero have been measured for lard oil and castor oil, but again the contact angle is zero for these papers when turpentine is used (except for the wax treatments). These estimates and measurements of contact angle were made employing both the height of drop method *(4)*, using a large diameter drop, and also the area of spreading small drops applied to the surface of the paper. In the same measurements, it was found that the contact angle of glassine papers for lard oil varies from almost zero for certain papers up to 20 degrees. A study of bleached glassine papers from ten different manufacturers showed that none was wetted by lard oil.

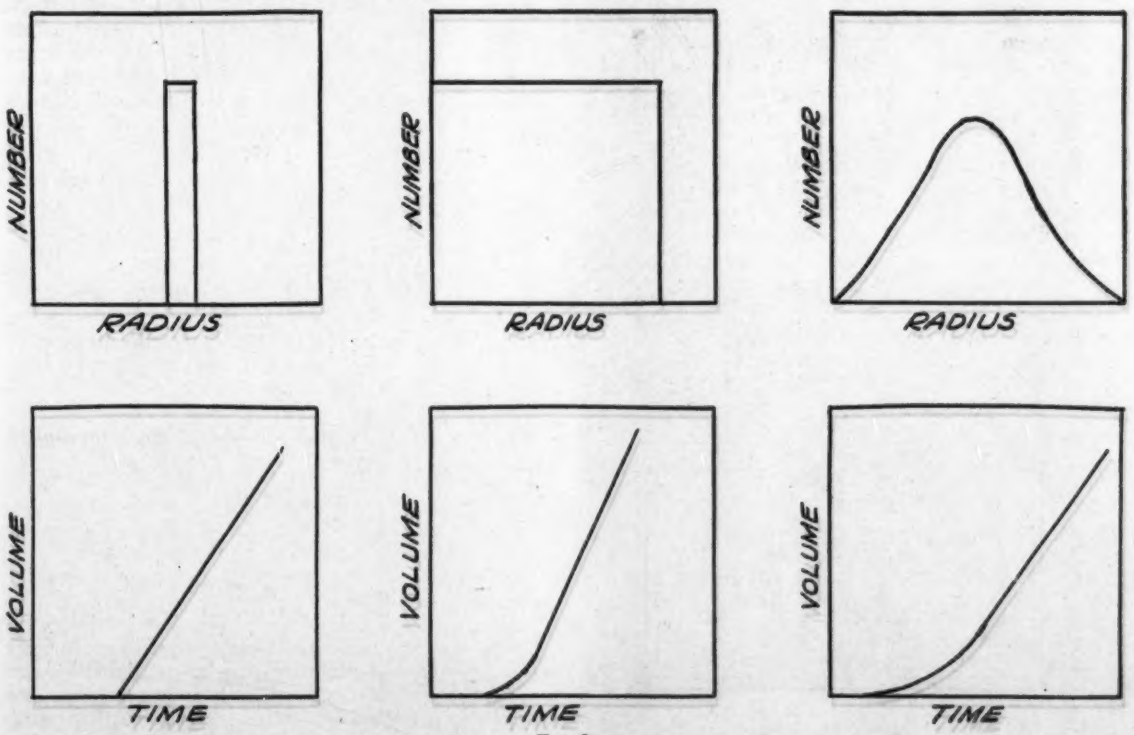

Fig. 2

Relation between Capillary Diameter Distribution and Shape of Volume-Versus-Time Curve

The spreading of small drops of oil on the surface of these greaseproof papers is most important in the visual appearance of translucent greaseproof paper as contrasted with an opaque greaseproof paper and is especially so wnen the opaque paper is treated so that the contact angle of the penetrant is different from zero. In this case the penetrant will be localized to small spot failures at the top surface of the sheet, whereas for the paper under comparison, a small volume of oil arriving at the top side of the sheet will spread over large areas on this top side, giving the appearance of large oily spots; this results in the visual judgments of very poor greaseproofness. It is realized that, in the contact angle measurements, the roughness of the paper surface is important but, in general, the rougher the paper, the smaller will be the apparent contact angle and the more the surface will be wetted.

Acceleration of Testing by Applied Pressure

The virtue of the use of high applied pressure in testing is based on the decrease in the time required for the test, as well as on the fact that the worst possible behavior of the sheet as regards its failure pattern will be obtained. The latter is true in general for a penetrant whose contact angle is zero for both chemically treated and untreated greaseproof papers. This again forces the conclusion that, using externally applied pressure, a study of the failure pattern will show only a proper indication of the capillary distribution in the sheet without regard to the wettability of the penetrant for the paper. Consequently, large discrepancies in ranking of greaseproof can be expected for a large group of papers—including normal greaseproof and those chemically treated—when tested at low as compared with high applied pressure.

The general equation of flow shows that, after the capillaries have been filled, the volume rate is inversely proportional to the viscosity of the penetrant and that the adhesion tension of the penetrant will influence only the time required to fill the capillaries in the sheet. The solvent action of the penetrant is important when considering the testing of chemically treated sheets. One of the important reasons for inversion of order of ranking different samples is the difference in solvent action of the penetrant used for accelerated testing as compared with the solvent properties of the penetrants employed in actual use. Accelerated tests carried out in a short period of time will not truly predict the behavior of a penetrant which dissolves the chemical treating agent slowly, but should show reasonable results when the treating agent is readily soluble in the penetrant.

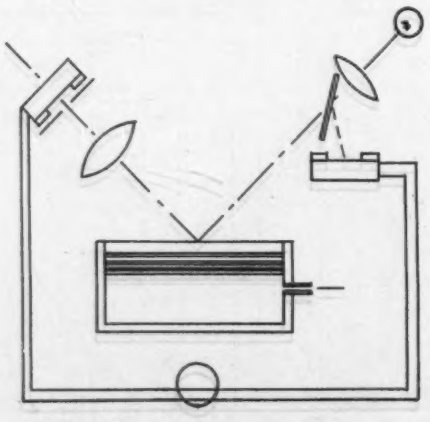

Fig. 3A
Schematic Diagram of Apparatus Used for Rate of Flow Measurements

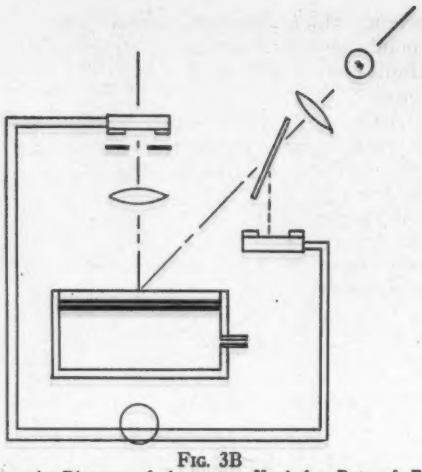

Fig. 3B
Schematic Diagram of Apparatus Used for Rate of Flow Measurements

Experimental Measurement of Rate of Flow

The main problem in quickly measuring the rate of flow is to obtain a means for measuring small quantities of oil (less than 1 mg.) on the top surface of the sheet. The objective of the measurement is to measure a rate of flow which is controlled by the resistance to flow of the paper sheet itself independent of the measuring means, with the only instrumental limitation that of sensitivity of detection. After consideration of several indirect measures of the volume of oil arriving at the top side of the sheet, it was decided to use a photoelectric method employing either diffusely or specularly reflected light from the sheet. Applied pressure is used to accelerate the test with any desired penetrant.

In the first method, the sheet is supported by a plane plate glass. Light is specularly reflected from a sandwich of backing plate (top), glassine or greaseproof paper, oil surface and black backing paper; the arrangement is schematically presented in Fig. 3. As oil comes through the greaseproof sheet, optical contact is formed between the greaseproof sheet and the supporting glass plate and the amount of specularly reflected light is decreased, thereby causing a change in photocurrent, which is observed as a function of the time after application of the pressure. This method was abandoned because of inconvenience in technique. In the second method, the light diffusely reflected from the sheet is used for measurement with the sample illuminated at 45 degrees and viewed normally to the surface by means of unfiltered tungsten light. As oil comes through the sheet, the oil film between the sheet and the supporting glass plate forms optical contact and reduces the light scattered at the top side of the sheet, thereby decreasing the photocurrent measured with a sensitive galvanometer. Both of these systems employ a balanced circuit so that fluctuations in lamp voltage do not cause fluctuations in the photocurrent; in this way extremely high sensitivity is obtained. In the present apparatus the sensitivity of detection is 5 mg. per square meter

per minute which, for the sample size employed, corresponds to a detection of a change of 0.025 mg. per minute for a fluid with a viscosity of about 5 centipoises.

The theory of flow covering the present experimental arrangement is presented in Equation 5, which gives the result for a single capillary. The necessity for the development of a theory peculiar to the experimental arrangement arises because of the resistance term introduced by the oil film spreading between the paper sheet and the ground or plane glass supporting plate.

$$\frac{V}{t} = \frac{\pi(P + P_B)}{\eta} \left[\frac{1}{8L/R_{c1}^4 + (6/P) \log R_1/R_{c1}} \right], \quad (5)$$

where

V = volume in cc.,
t = time in sec.,
P = applied external pressure in dynes/sq. cm.,
P_B = film pressure = $2\ T[(1/R) - (1/l)]$,
η = viscosity of penetrant in poises,
l = oil film thickness (in cm.) between greaseproof paper and backing glass plate,
L = average length of capillaries in cm.,
T = surface tension,
R_1 = radius of oil spot between paper and backing glass in cm., and
R_{c1} = radius of capillaries in sheet in cm.

In general terms, it is seen that the oil film will in itself contribute to the total flow resistance in proportion to the ratio of the oil-film resistance to the capillary resistance. An ideal instrumental arrangement would take advantage of the increase in sensitivity occasioned by the spreading of the oil film but would not include the oil-film resistance in the definition of the flow resistance directly measured on the instrument. As soon as the failure spot spreads to a diameter of 1 mm. the film pressure may be considered constant, but the film-resistance term becomes appreciable, accounting for the decrease in the rate of flow with increasing time of application of the pressure.

Measurements were taken at first with a plate glass backing plate with the hope that an initial rate could be determined which would be independent of the film-resistance term. However, this was not found to be the case because the volume-versus-time curve on the average showed that the volume depended on the 0.7th power of the time and that, even at the earliest times, the film resistance was appreciable, and varied from sheet to sheet depending upon the spreading pattern of the failure spots. It is seen from Equation 5 that, to minimize the film resistance contribution, it is necessary to increase the thickness of the oil film between this sheet and the backing plate. This, of course, will reduce the sensitivity of detection in direct proportion to the increase in thickness of the film. The easiest way to introduce this increase in film thickness is to use a ground glass backing plate rather than the plane glass plate used first. Using the plane glass plate, a typical value of the thickness of the oil film for greaseproof papers is about one micron, whereas using the ground glass plate (ground with 65-mesh emery), the thickness is about 10 to 20 microns. The summary of the results on these data show that even for this coarsely ground glass backing plate, the film resistance term in Equation 5 is still not completely negligible. However, the initial slope of the volume-versus-time curve is 0.94 on the average for the greaseproof papers of interest, without the sharp decrease in this value at long penetration times. Thus, it seems fair to assume that the initial rate data obtained with the coarse ground glass backing plate is controlled principally by the flow resistance of the greaseproof sheet rather than by the combination of the greaseproof sheet and the oil-film resistance.

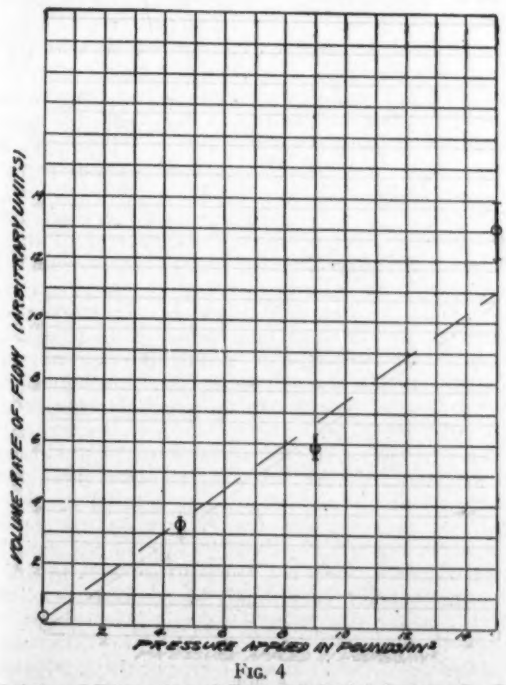

FIG. 4
Variation of Volume Rate of Flow with Applied Pressure of a Low-Grade Greaseproof

EXPERIMENTAL DATA

In the first work, spot counting methods were employed, using a fluorescent dye as the detector. The result of these measurements showed that, on the whole, the spot count method would serve to classify papers in terms of large differences in greaseproofness, but that the proper relative importance of the size of the spots for samples of about the same greaseproofness was not easily defined. Because of a large difference in the character of the failure pattern for greaseproof papers as compared with bleached glassine, supertransparent glassine, and Baglass, it was felt as stated earlier, that the class division between supercalendered glassine and greaseproofs should be made. As long as the spot count method was used to order samples of a given grade, reasonable correlation was obtained between the greaseproof ranking of these samples obtained under 10 p.s.i. and solid lard applied to the sheet as a penetrant. No numerical combinations of spot count values were found which would correlate with the ranking of papers for solid lard applied to their surfaces when the range from unbleached greaseproof to supertransparent glassine for a given mill's production was considered. Initial volume rate of flow measurements employing plane glass backing plate did not improve this lack of correlation.

TYPICAL VALUES OF RATES OF FLOW

For applied pressures of 15 p.s.i., the volume rates of flow vary from 166,000 mg. per square meter per minute to 5 mg. per square meter per minute for lard oil of a viscosity of 47 centipoises. There is a whole range of papers with normal turpentine times above

700 seconds whose volume rates will in general be much smaller than 5 mg./sq.m./min.

The variation of rate of flow with increasing pressure for a low-grade greaseproof is shown in Fig. 4. The volume rates should be compared at the same volumes of oil on the top side of the sheet corresponding to the closest approximation to equal resistance terms associated with the oil film. When this is done, it is found that the theoretically expected relation of volume rate and applied pressure is true within the limits of sampling error, but apparently does not hold for the determination of the volume after several seconds (the point obtained at the highest pressure). The probable error in the average value for the experimental points are indicated in Fig. 4.

As mentioned above, Equation 5 shows that the volume rate of flow is inversely proportional to the viscosity of the penetrant for the cases in which the film resistance is negligible or appreciable. However, in comparing the rates corresponding to the changes in viscosity, the comparisons must be made at corresponding film resistance values. When this was done, it was found that the rates are inversely proportional to the viscosity.

A series of samples of greaseproof paper was provided by the Technical Committee of the Glassine and Greaseproof Manufacturers' Association who agreed that a comparison of the volume rate of flow measurement with the Association's standard turpentine time would be of interest in deciding whether or not an objective rate of flow measurement would have practical merit. It was also decided to limit the paper in this particular aspect of study to greaseproof papers only and to exclude from the group glassine and supertransparent sheets. The samples chosen were obtained from a given mill and included normal greaseproof as well as chemically treated greaseproof

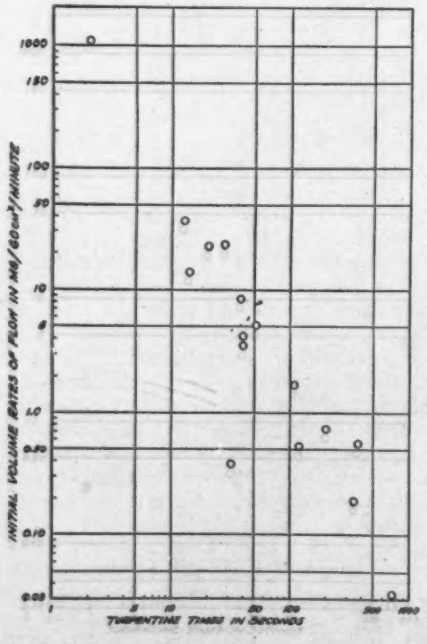

FIG. 5
The Relation between Initial Volume Rates of Flow and Turpentine Times for a Selected Group of Greaseproof Papers

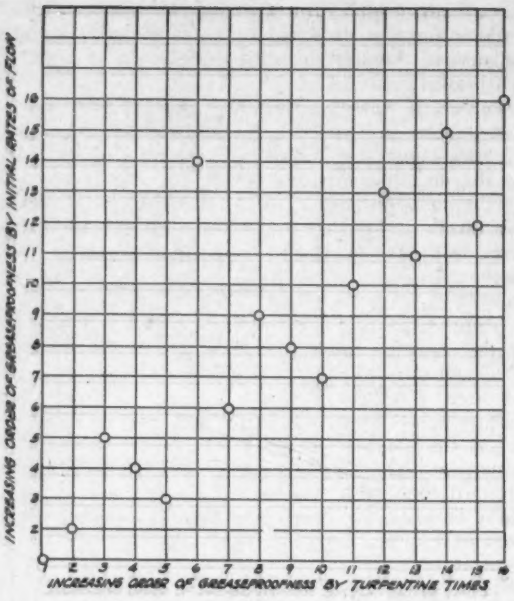
INCREASING ORDER OF GREASEPROOFNESS BY INITIAL RATES OF FLOW
INCREASING ORDER OF GREASEPROOFNESS BY TURPENTINE TIMES

FIG. 6
The Correlation of the Ranking Obtained from Volume Rate of Flow with Turpentine Times

sheets. The data on the volume rate of flow measurements and the Glassine and Greaseproof Association's turpentine test are presented in Table I. On the basis of these data, samples are ranked in increasing degrees of greaseproofness from 1 to 17 and the correlation curves of rank are presented in Figs. 5 and 6. These results show poor correlation of the turpentine test with the rate of flow data. However, the general trend is the same, with the slope of the best straight line drawn through the scattered points of Fig. 5 being 1.75. This fact is equivalent to the statement that the volume rates of flow are inversely proportional to the 1.75th power of the turpentine times, recognizing the large deviations from this correlation curve which actually exist in the data presented in Fig. 5. As will be discussed in the last section, the best correlation to be expected between turpentine times and volume rates of flow will require that the volume rates of flow be inversely proportional to the square of the turpentine times.

This lack of correlation directs attention to the relative importance of size and number of capillary failures in arriving at an estimate of greaseproofness when judged by the appearance of the sheet as compared with the judgment based on the amount of penetrant transferred to an absorbent material in contact with the greaseproof sheet. Because of this necessity, detailed consideration will be given to several samples included in the measurements. It is observed from Figs. 5 and 6 that there are large inversions in the ranking of samples by the turpentine test as compared with the volume rate of flow test. It becomes necessary, therefore, to account for these large variations. At the outset it is to be stated that the inversions are real per sample covering the whole range of turpentine time from 10 seconds to 1000 seconds. Samples 11 through 16 form an excellent group for our discussion of detailed inversions in order. In the case of samples 11 and 13, the turpentine times differ by over a factor of three, whereas the volume rates are in the inverse order and differ

by only about 40%; for these two samples, this difference is just on the limit of being a real difference because of the large average deviation of Sample 13. The failure patterns of the two sheets are altogether different, in that Sample 11 has a rather uniform distribution in capillary diameters, whereas Sample 13 has a double distribution including a few large capillaries and a larger number of smaller capillaries. In the case of Sample 13, when pressure is applied, the larger failure spots develop rapidly and spread over large areas whereas for Sample 11 with the same oil, the spreading is localized for times less than two or three minutes.

Another pair of interest are Samples 12 and 14; in this case the turpentine times are practically identical and the volume rates of flow differ by a factor of three. It will be observed that there are many more failure points present in Sample 14 than in Sample 12 when the samples are observed under pressure of penetrant. The turpentine times show that the diameters of the largest capillaries are about the same for these two sheets. Another inversion is found in the case of Sample 13 and Sample 16 in which the turpentine time differs by a factor of two and the volume rates of flow differ in the opposite sense by about 40%. These two samples are of interest because of their marked difference in failure pattern: Sample 16 has a large number of fairly small capillaries of rather uniform capillary diameter distribution in contrast with the double distribution mentioned above for Sample 13. In addition, Sample 16 is an opaque sheet whereas Sample 13 (after oiling its surface) is one of the most transparent sheets of the group. It is observed that a large amount of oil may be present on Sample 16 but it is very difficult to judge its existence on the surface of the sheet because of the high opacity of the paper, whereas a small amount of oil on Sample 13 will result in a high degree of transparency of the sheet and its easy detection; the result is that a visual estimate shows

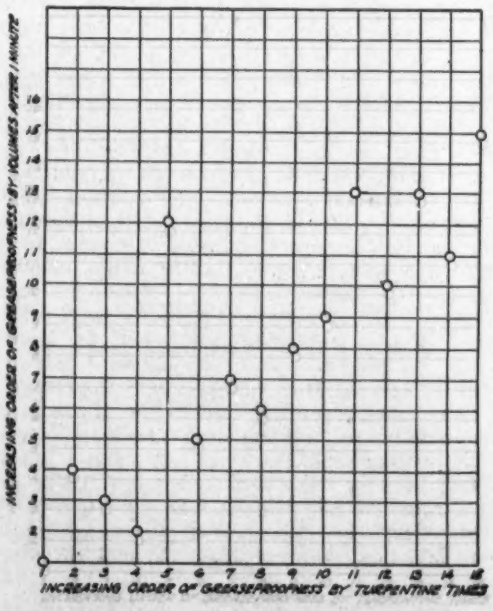
INCREASING ORDER OF GREASEPROOFNESS BY VOLUMES AFTER 1 MINUTE
INCREASING ORDER OF GREASEPROOFNESS BY TURPENTINE TIMES

FIG. 7
The Correlation of the Ranking Obtained from Volume after One Minute with Turpentine Times

TABLE I.—COMPARISON OF RATE OF FLOW DATA WITH THE GLASSINE AND GREASEPROOF MANUFACTURERS' ASSOCIATION TURPENTINE TEST

(The Rate of Flow is Given as mg./60 sq. cm./min.)

Sample	Rate of flow	Average Deviation in %	Turpentine time in sec.*	Rank by rate measurements	Rank by Turpentine Test
1	1060	..	2	1	1
2	36.8	10	12	2	2
3	22.6	20	20	4	4
4	23.2	10	28	3	3
5	14.0	20	14	5	5
6	8.4	15	38	6	7
7	3.4	10	40	9	8
8	4.1	..	40	8	6
9	5.1	20	52	7	10
10	1.7	20	107	10	11
11	0.37	20	32	14	9
12	0.19	..	347	15	14
13	0.54	50	118	13	12
14	0.57	..	377	12	15
15	<0.016	..	1000	..	
16	0.73	20	203	11	13
17	0.032	..	705	16	16
18	<0.016	..	>1800	**	**
19	<0.016	..	>1800	**	**
20	<0.016	..	>1800	**	**

* Test results supplied by member of Glassine and Greaseproof Association.
** No ranking given for sample at time greater than 1800 sec.

that Sample 13 is much poorer in greaseproofness than is Sample 16. Summarizing these data, we have at hand pairs of sheets of practical importance in which there are serious inversions between the volume rate measurement and the turpentine test measurements and, in most cases, it seems that the discrepancies are to be associated with the differences in the character of the failure pattern in terms of the number and the distribution in diameter of the capillary failure points.

The importance of the above discussion of these test pairs cannot be overlooked, and the frequent inversions occurring between the two testing methods must be considered typical. It must also be stated that the inversions are large enough so that they may not be dismissed as sampling errors and forces the conclusion that the methods do not and cannot be expected to correlate with each other, especially when close scrutiny of the data is made. For the range of normal greaseproof papers, the ranking of the sheet is judged in terms of the number of spots and the area of the sheet over which the oil spreads from a given capillary fountain. The chemically treated sheets with a finite contact angle will in general have much greater preference in greaseproof ranking over sheets having the same number but even smaller capillary diameters with a contact angle of zero. In a similar manner, the opacity of a given sample affects markedly the visual importance assigned to capillary failures of a given size, as was mentioned above.

The volume of oil which penetrates the sheet within a fixed time has been considered as a measure of greaseproofness. The volumes of oil penetrating the sheets for a time of one minute were measured and the poor correlation with the turpentine time is illustrated in Fig. 7.

Sampling

There has been a great deal of discussion in the past about the size of sample and the number of specimens required for obtaining a trustworthy average greaseproof index for a given lot of paper. Results show that methods using spot counts after a given time or increasing times give rise to smaller variations in the greaseproof index from specimen to specimen of a given sample for a lot of paper than is obtained for the time required for the appearance of a small fixed number of spots. However, the general consideration for the proper sample size for reasonable variations from specimen to specimen is that the size

of the specimen shall be large compared with the typical failure pattern. This sample size in many greaseproof papers would seem to be the equivalent of a circle three or four inches in diameter. However, for a number of papers of interest, variation from specimen to specimen is much larger than is to be expected even with this relatively large sample area, and it has been found that, in these cases, the type of failure pattern from specimen to specimen varies to such an extent that one failure pattern would simply not be classed as related to the other one under comparison. Consequently, it appears that variations in greaseproofness within a given lot of paper occur which are as great or greater than the differences corresponding to two lots which are of interest. The answer in this case is that no matter what sample size is chosen, large variations from specimen to specimen will be observed.

The average deviations of single observations of rate of flow vary from 10 to 50% depending upon the type of paper, with the largest average deviation occurring for those samples having a small number of large failure spots. Using these values of the average deviation, it is found that differences in the mean values of 10 measurements, in order to be significant, vary from 6 to 40%, assuming similar papers have been compared.

Interpretation of Spot Counting Methods

In any spot counting method, the greatest difficulty is to assign proper relative importance to the different capillary diameter distributions which are observed. If one chooses to correlate spot count methods with volume rate of flow methods, the best expected correlation would be with a properly weighed spot count which includes an indirect measure of the capillary diameters and the associated volume rates of flow through these several capillaries.

This was done and it was found that the volume rate of flow through the several capillaries is inversely proportional to the square of the time of filling the capillaries so that a weighed spot count would be expected to correlate best with rate of flow measurements when the increase in the number of failure spots in increasing time intervals would be given relative importance in proportion to the inverse square of the time interval in which the increase occurred.

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Bill Cunningham to Address TAPPI

After three days of intensive discussion of packaging and other wartime problems, members and guests, attending the annual Fall Meeting of the Technical Association of the Pulp and Paper Industry at the Hotel Statler, Boston, will be assured of an interesting climax at the banquet on October 1.

Bill Cunningham, famous columnist and sports writer, will be the after-dinner speaker. Bill Cunningham has been called one of the half dozen outstanding after-dinner speakers extant. For nearly twenty years he was generally accepted as the most widely read and most popular newspaper columnist in New England. Now his column is nationally syndicated and his popularity is established on a nation-wide basis.

Cunningham is a native son of Texas. He came to New England to go to college at Dartmouth and with the exception of two years in the Army in World War I, and a couple of years of coaching football in his native Texas, he has remained a New Englander.

At Dartmouth all Bill could find to do was win honors in his major subject, English, be all-American center on the football team, and run a movie theater. During his career he has covered every

Bill Cunningham

major sports event. He has attended all the Olympic Games since Paris in 1924. Baseball spring training camps and World Series games are as commonplace to Cunningham as the wet end to a machine tender.

But Bill Cunningham is not just a sports writer nor do sport fans make up his entire reading audience. Today thousands of people all over the country are reading his brilliant words on the war, and the war effort. People who have heard Cunningham speak, can assure those less fortunate that they have a real treat in store at the TAPPI Banquet on October 1.

Eddy Paper Mill Unit Sold

[From our regular correspondent]

Three Rivers, Mich., September 9, 1942—Ottis H. Cox, manager of the Eddy Paper Corporation here, according to the *Kalamazoo Gazette*, announced Friday that the paper machines No. 4 and 5 and the building housing them had been sold. These machines constitute mill No. 3. The same will be operated indefinitely. The new arrangement, according to Mr. Cox, does not affect old mill No. 1 nor the box shop.

A detailed announcement of the transaction involving the mills will be released about October 1, Mr. Cox says.

IMPORTS OF PAPER

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 5, 1942

SUMMARY

Newsprint .....374 rolls

NEWSPRINT

——, ——, ——, 374 rolls.

PAPERSTOCK

——, ——, ——, 4765 bls. cotton linters.

OLD ROPE

W. Steck & Co., ——, ——, 51 bdls.

CASEIN

——, ——, ——, 1231 bags.

BONES

——, ——, ——, 1767 bags.
——, ——, ——, 3331 bags.

A. R. Heron in Army

Alexander R. Heron, industrial relations and public relations director of the Crown Zellerbach Corp. and Rayonier, Inc., will take up immediate active duties as chief of the personnel branch, Services of Supply, U. S. Army. His rank will be full colonel.

Mr. Heron, who was elected vice-president of the Crown Zellerbach Corp., has been granted a military leave of absence for the duration of the war by the concerns and left September 2 for Washington, D. C.

Mr. Heron has represented the entire Pacific Coast paper and pulp industry in its relationship with the two international paper and pulp unions. During eight consecutive years of this relationship not one hour of time has been lost due to a labor dispute. He is consulting professor of industrial relations at Stanford University and the author of a recent book: "Toward Understanding in Industry," published by the Stanford Press.

Salvage Plan Succeeds

At the executive committee meeting of the Industrial Salvage Committee of the Setup Paper Box, Folding Carton, Corrugated and Fibre Container, Paper Bag, Paper Cup and Paper Can and Tube Industries, operating under direction of the Industrial Salvage Section of the War Production Board, held September 2 at Hotel Roosevelt, Manhattan, 1,780,000 pounds of critical scrap material had, during August, been collected in plants of those industries and sent into smelting channels, for refabrication into armament products.

Samuel Kipnis, president, National Container Corporation, Long Island City, (chairman by appointment of WPB), of the above mentioned executive committee, reported that the surface has scarcely been scratched as comparatively few of the plants had been able, since the formation of the committee last month, to get all their scrap together for removal. Of the score plants reporting, the Lily Cup Company was recorded for 231,000 pounds of iron and steel, 2,400 pounds of rubber and 1,060 pounds of aluminum; Robert Gair Company, Inc., a total of 1,030,000 pounds of scrap, including 8,000 pounds of rubber; Grand-City Container Corporation, 85,000 pounds, including 1,400 pounds of rubber; National Container Corporation, 320,000 pounds of scrap, including two tons of rubber.

The S & S Corrugated Paper Machinery Company, Inc., Brooklyn, now operating practically 100 percent on prime and sub-contract war work, is breaking up metal including old style machines, at the rate of eight tons daily, which accumulation is not included in the figures mentioned above.

Sub-committee chairmen of the several groups making a drive for scrap materials are George E. Dyke, president, Robert Gair Company, Inc.; A. Dorfman, of company bearing his name; W. L. Stevens of Improved Mailing Case Company; Bernard Rouse, Grand-City Container Corporation all of New York and William Salzman, Brooklyn Standard Bag Company.

Labor Arbitration in Wartime

The American Arbitration Association, as a public service, has made its recently published booklet entitled "Labor Arbitration in Wartime" available without cost to corporations, unions, and attorneys. Union executives, corporation officers interested in labor relations, and attorneys may obtain copies at the organization's administrative offices, 9 Rockefeller Plaza, New York City.

Included in the publication is a series of seven labor arbitration clauses which are recommended to parties to labor agreements, these having been prepared after consultation with a group of impartial chairmen serving more than twenty of the largest industries. Also included are summaries of approximately two hundred typical grievances that have been submitted to arbitration.

The American Arbitration Association, now completing its sixteenth year of operation, is the only non-political, non-partisan, non-profit-making agency providing voluntary arbitration facilities throughout the United States. Branch offices are maintained in thirty key industrial centers, and tribunal facilities in sixteen hundred cities from coast to coast.

Clondalkin Mills Run Part Time

[FROM OUR REGULAR CORRESPONDENT]

One mill, the Clondalkin Paper Mills, Limited, supplied Ireland with two-thirds of the national paper needs during 1941. The mill has not worked to full capacity, however, because of the shortage of raw materials, according to a report to the Department of Commerce.

Wood pulp was received in abundant quantities from the United States, but waste paper was not received in sufficient amounts to keep the mills working for full time.

Machinery for processing wheaten straw has been installed by the Clondalkin mill, and it has recommended in its report that Ireland undertake a long range reforestation program to provide wood for a wood pulp industry.

Limited amounts of newsprint were supplied to newspapers throughout the year, helping to ease the shortage in the newsprint field.

Leeds & Northrup Get Navy "E"

On Saturday last, Leeds & Northrup Company was awarded the Army-Navy "E." The pennant was presented to Charles S. Redding, president, by Admiral Henry A. Wiley, U. S. N. retired, and the ceremonies which were attended by 2,000 employees of the company, were held in Wister Park, Lindley and Belfield avenues. William L. Batt, Philadelphia deputy chairman of the War Production Board, delivered a stirring address, emphasizing the fact that "the job to be done by American industry in the war is the greatest it has ever faced."

New York Paper and Pulp Market Review

Paper Market Moderately Active As Orders For Some Grades Indicates Improved Demand — Pulp Market Little Changed — No Change In Paper Stock Prices or Demand — Roofing Rags Steady.

Office of the PAPER TRADE JOURNAL.
Wednesday, September 9, 1942.

A little improvement in demand is indicated in some of the reports received from many manufacturers' representatives, jobbers, and general paper merchants this week. The several important deterrent factors present in the current business situation, however, exert strong pressure to check, but may not necessarily prevent a seasonal rise in demand. These factors are higher taxes, concentration of industry, impending transportation difficulties and restrictions, and the wholesale phase of proposed inventory control.

Although the outlook for industry and trade supplying civilian needs is less favorable as the war effort takes on larger proportions, the paper industry is in a more fortunate position than some other major industries. Current reports indicate a moderate increase in demand for the near future, with the longer view, of course, unpredictable.

The index of general business activity rose to 132.6% for the week ended August 29, from 131.6% for the preceding week, compared with 130.2% for the corresponding week last year. Paper board production was 3.4% higher.

Paper production for the week ended August 29 was estimated at 82.8%, compared with 102.4% for 1941, with 85.7% for 1940, with 85.0% for 1939, and with 77.0% for the corresponding week for 1938.

Paper board production for the week ended August 29 was 77.0%, compared with 97.0% for 1941, with 74.0% for 1940, with 73.0% for 1939, and with 67.0% for the corresponding week for 1938.

Wood Pulp

Demand for chemical wood pulp continues to reflect the easy supply situation. Good grades of bleached sulphite are in a strong market position, as are prime grades of unbleached sulphite. The effects of the simplification plan, cross hauling and shortage of labor for cutting pulpwood, is quite generally expected to severely restrict the production and distribution of pulp for civilian uses. The outlook is uncertain at this date.

Rags

Mill buying of roofing rags is reported as continuing steady in sufficient volume to maintain an active market. Prices are unchanged.

Buying of new cotton cuttings is rather limited at this date and this market is relatively quiet. No important change in prices has been reported this week.

Old Rope and Bagging

Mill buying of old Manila rope continues steady. The price is firm and the maximum price of $115 per ton prevails.

Current mill demand for scrap bagging is reported light. The limited supply situation tends to maintain firm prices, which are of a nominal nature. No price changes have been reported this week.

Old Waste Paper

No apparent improvement in demand or prices is reflected in reports in the paper stock market at this date. This market seems to be in a good position, so far as the lower grades are concerned, as no oversupply in mixed, news, and corrugated has been reported. Prices are steady.

Twine

Prices on all standard grades of hard and soft fiber twines are maintained. The supply situation in jute, due to the difficulties in shipping, continues to maintain firmness in imported fibers.

Babcock & Wilcox Gets "M" Award

The Barberton, Ohio, Works of The Babcock & Wilcox Co., 85 Liberty street, New York, was awarded the Maritime Commission "M" burgee on September 3.

The award was made by Rear Admiral Emory S. Land, chairman of the U. S. Maritime Commission. The "M" burgee now flies alongside the Navy "E" burgee, which was awarded to the company last May. The concern is wholly engaged in the manufacture of power boilers and accessory equipment for the Navy, Maritime Commission and many war industries. It is also producing gun mounts for U. S. Naval vessels.

In accepting the award, A. G. Pratt, president of The Babcock & Wilsox Co., said in part: "The fact that our efforts have thus been recognized by the Maritime Commission will surely spur us on to even greater accomplishment."

A brief address was also made by Governor John W. Bricker of Ohio. The ceremonies were broadcast over a nation-wide network.

WPB Issues Watermark Interpretation

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Sept. 9, 1942—An interpretation of Schedule III to Limitation Order L-120, which establishes specifications for standardization and simplification of various types of fine writing papers, has been issued by the WPB Director General for Operations in order to clear up questions arising over the use of the term "special name watermark."

The schedule sets forth the quantities of different types of paper that may be manufactured with a "special name watermark." The interpretation states that this term includes merchant marks, such as appear on letter heads and other papers to identify a merchant's regular stock line.

Papers covered by the specification in Schedule III may be manufactured bearing merchant marks, provided general prohibitions in the schedule are adhered to.

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of

ENGLISH FINISH SUPERCALENDERED MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

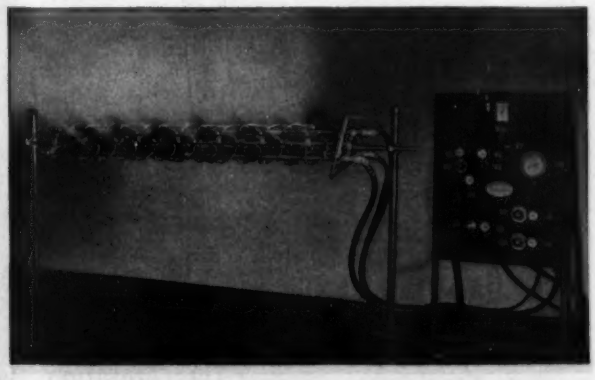
MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina

FIBRE MAKING PROCESSES, INC.

435 N. Michigan Ave., Chicago

U-Bar Barking & Washing Drum
Orrmell Log Barker
Waplan Bark Press
Nekoosa Chip Cutter
F.M.P. Circ. & Ind. Heating System
Coolidge Chip Packer
F.M.P. Coarse Screen & Knotter
Blow Steam Plants
Thune Pressure Filter
Norman Chip Duster
Drammen Blow Valve
Sandberg Diffuser Valve



SPRACO BATTERY SPRAY MOISTENING EQUIPMENT

For the application of moisture in the form of coarse spray, fine spray or mist of uniform density across any desired width of web, with controls for varying the amount of moisture sprayed, at the same time maintaining uniform distribution.

Used extensively for the elimination of production difficulties due to uncontrolled moisture content. Improves finish, increases fibre strength and flexibility, eliminates static, prevents warp and waste. Each installation designed to meet operating requirements for any specified width, weight and speed of paper.

Write to

SPRAY ENGINEERING CO.

118 Central St., Somerville, Mass.

PARIS BLACKS

BLACKS KNOWN FOR THEIR TONE, STRENGTH AND MISCIBILITY

BLAC-KING 45 RX

An aqueous dispersion of Carbon Black with a solid content of 45%. This product is specially designed for use as a coloring agent for paper. Clean to handle and eliminates possible contamination of other colors in the beater room.

Samples and information on request

UNITED CARBON COMPANY INC.
Charleston, W. Virginia

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, September 9, 1942.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. The pulp is currently quoted at $40 per ton in barrels, at works; the powder is offered at $60 per ton, f.o.b., works. Demand reported fair for the week.

BLEACHING POWDER—Prices on bleaching powder are firm. Supply under allocation control. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are higher for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 18½ cents per pound; 80-100 mesh at 19 cents per pound; all prices in bags, car lots. Argentine casein at 7½ cents per pound is reported nominal. No quotations on French casein.

CAUSTIC SODA—Prices of caustic soda are reported unchanged. Supplies ample. Demand fair for the current week. Solid caustic soda is currently quoted at $2.30 per 100 pounds, flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged. Demand reported fair for the current week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine unchanged. Government demand for war use continues heavy. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—Quotations on some grades of rosin are higher for the current week. "G" gum rosin is currently quoted at $3.12 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $3.12 per 100 pounds in barrels, New York. Seventy per cent gum rosin size is quoted at $3.43 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand reported fair for the current week. Domestic salt cake is currently quoted at $15 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. Quotations on imported salt cake are nominal at $16 per ton.

SODA ASH—Quotations on soda ash are unchanged and continue to conform to prevailing market quotations. Demand moderate. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch continue unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported fair. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at from $1.75 to $1.85 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices of sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $16 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	$5.00	@	—
No. 1 Wrapping	4.75	"	—
Standard Wrapping	4.50	"	—
Standard Bag	4.125	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	84.00	"	116.00

*OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$40.25@$47.25	$41.40@$48.50
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	32.20 " 37.75
75% Rag	24.75 " 29.00	25.90 " 30.50
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Tree Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight to Destination.

Bl. Softwood Sulphite	$76.00
Unbl. Softwood Sulphite	64.00@ 66.00
Bl. Hardwood Sulphite	73.50
Unbl. Hardwood Sulphite	63.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	66.00
Unbl. Soda	62.00
Groundwood	46.00

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50
	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum price.

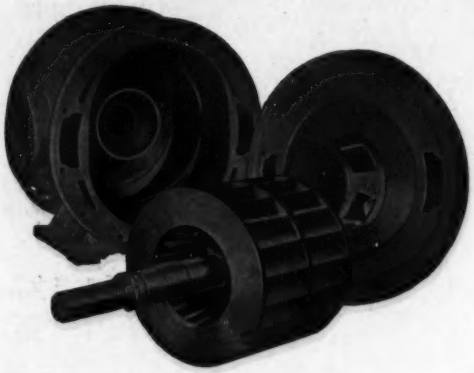
Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

SIMPLICITY



NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

WATERBURY FELTS

Are Made By

H. WATERBURY & SONS CO.
ORISKANY, NEW YORK

UNREALIZED ABILITIES
of Your Paper or Board Machine
Unrealized Abilities of your paper or board machine may be grasped by treating your stock with a Sutherland Single Rotating Disc Refiner. Sutherland Refiner Corporation, Trenton, New Jersey.
SUTHERLAND REFINERS

sonoco
PAPER MILL CORES

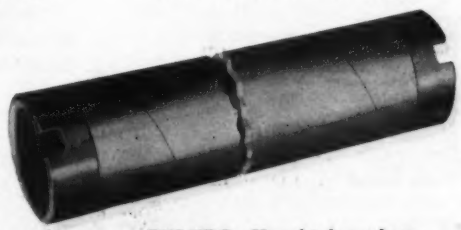
To meet every condition required

RHINO NON-RETURNABLE

For all uses requiring an extremely tough non-returnable paper mill core.

TAYLOR ENDS

DURO—Standard returnable core of plus-standard quality. Shown with Taylor ends. Also available with Bermico ends.



BERMICO ENDS

ENDURO—Very high grade returnable core to meet extra demand for strength. Shown with Bermico ends—Taylor ends available.

BERMICO*

*Exclusive distributors for Bermico ends Bermico Fibre Cores

BERMICO—A returnable fibre core—extremely hard, strong and rugged. Treated to resist weather and moisture changes.

SONOCO PRODUCTS COMPANY
BRANTFORD ONT. HARTSVILLE S. C. MYSTIC CONN.
SHIPPING POINTS: LOWELL, MASS. HARTSVILLE, S. C.
DEPENDABLE SOURCE OF SUPPLY

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	4.75
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	4.25	"	4.75
Sisal Strings	3.25	"	3.75
Mixed Strings	1.10	"	1.30

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Mixed Books	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	1.75	"	—
Old Corrugated Containers	1.00	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.36	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.22	"	—
Soft Fiber Rope	.19	"	—
Cotton	.35	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07½	@	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04½	"	.04¾
Silesias, No. 1	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached	.07¼	"	.07½
Washable Prints	.03¾	"	.03½
Washable No. 1	.02	"	.02¼
Blue Overall	.04½	"	.05¼
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¼	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¾	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed Rope	.75	"	1.00
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old Corrugated Containers	1.00	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.10	@	4.40
Sisal Rope	4.50	"	5.00
Mixed Rope	1.35	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.75	"	5.00
Jute Carpet Threads	3.25	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	4.50	"	—
Scrap Sisal	4.50	"	4.75
Scrap Sisal for Shredding	4.75	"	5.25
Wool Tares—			
Foreign	(nominal)		
Domestic	5.00	"	5.75
Aust. Wool Pouches	4.75	"	5.25
New Burlap Cuttings	5.25	"	5.50
Heavy Baling Bagging	4.50	"	5.00
Paper Mill Bagging	2.50	"	3.00
No. 2 Bagging	1.35	"	—*

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No. 1	.06½	"	.07
New Light Flannelettes	.06	"	.06¼
Canton Flannel, Bleached	.06¾	"	.07
Underwear Cutters, Bleached	.06½	"	.06¾
Underwear Cutters, Unbleached	6.50	"	6.75
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03¾	"	.04
Red Cotton Cuttings	.03¾	"	.04
Soft Unbleached	.07	"	.07¼
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.03½	"	.03¾
O. D. Khaki	.04	"	.04¼
Corduroy	.03½	"	.03¾
New Canvas	.07	"	.07¼
B. V. D. Cuttings	.07¾	"	.08

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.30
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 2 Roofing Rags	1.45	"	—